Government Guarantees and Banks' Earnings Management*

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Abstract

Prior studies find that banks engage in earnings management behavior to distort reported performance in ways that have implications for capital allocation and regulation. We examine whether banks' incentives to engage in this behavior are reduced by government guarantees, which mitigate concerns about financial stability during economic downturns. Using two distinct but complementary settings that provide plausibly exogenous shocks to government guarantees, we find that decreases (increases) in government guarantees are associated with significant increases (decreases) in banks' earnings management behavior. Our findings suggest government guarantees play a significant role in the quality of information banks disclose to capital markets.

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1 Introduction

In this study we examine the effects of government guarantees on banks' earnings management behavior. Governments commonly provide explicit and implicit guarantees to reduce concerns about the stability of the banking sector and to limit the size and scope of potential financial disasters (Allen et al., 2017).[1] Consistent with investors perceiving government guarantees as potential cash infusions during economic downturns, prior studies find that government guarantees are positively associated with market prices for a variety of bank-specific securities (e.g., O'Hara and Shaw, 1990; Flannery and Sorescu, 1996; Gandhi and Lustig, 2015; Kelly, Lustig, and Van Nieuwerburgh, 2016; Gandhi, Lustig, and Plazzi, 2016). While the real effects of government guarantees for banks are well documented, our understanding of whether these guarantees have capital market reporting implications is unclear. We provide the first empirical evidence on how government guarantees affect banks' earnings management behavior.

We model the effect of government guarantees as a function of the marginal benefits and costs of banks' endogenous choice of earnings management and predict that such guarantees reduce banks' earning management incentives. Prior studies suggest that one reason firms engage in earnings management is to report smoother earnings trends so as to be perceived by investors as less risky (Trueman and Titman, 1988; Barth, Elliott, and Finn, 1999; Graham, Harvey, and Rajgopal, 2005). Banks have particularly strong incentives to smooth earnings due to the complex nature of their transactions and the opacity of their financial reports (Diamond and Dybvig, 1983; Diamond and Rajan, 2001; Morgan, 2002; Flannery, Kwan, and Nimalendran, 2004). In fact, prior studies show that banks use reporting discretion to manage earnings and circumvent capital requirements (Ahmed, Takeda, and Thomas, 1999; Huizinga and Laeven, 2012; Beatty and Liao, 2014; Jiang, Levine, and Lin, 2016) which in turn can interfere with bank regulation and capital allocation (Jayaratne and Strahan, 1996; Cohen et al., 2014). In this paper, we suggest that government guarantees reduce the marginal benefits to banks of reporting smooth earnings. Government guarantees transfer down-side risk away from investors, which in turn reduces the importance of earnings in investors' risk assessments. This prediction is not without tension, however, as government guarantees can also reduce investors'

[1] As shown in Allen et al. (2017), government guarantees are generally welfare improving through their effect on banks' liquidity provisioning, although distortions due to moral hazard problems may also occur.

incentives to monitor banks' financial reporting (Acharya, Aginer, and Warburton, 2016) and increase banks' incentives to engage in greater risk taking behavior (Duchin and Sosyura, 2014; Gropp, Gruendl, and Guettler, 2013; Fischer, Hainz, Rocholl, and Steffen, 2014), possibly leading to increased earnings management behavior.

Testing an association between government guarantees and banks' earnings management behavior is a challenging task. First, variation in government guarantees is difficult to measure as such guarantees are often implicitly granted to banks and it is not always clear when these guarantees start or end. Second, common measures of variation in government guarantees (e.g., bank size) are often endogenous to banks' reporting decisions and can reflect other constructs. To empirically identify variation in government guarantees we exploit two different but complementary settings which provide plausibly exogenous shocks to banks' government guarantees. These settings differ along several dimensions including: (i) internal versus external validity, (ii) explicit versus implicit guarantees, and (iii) positive versus negative shocks to government guarantees.

Our first set of analyses examines the removal of explicit government guarantees in 2005 from a group of state-owned German banks known as the Landesbanken. Prior to this event these banks were granted specific government guarantees, including an explicit guarantee of all their liabilities and a maintenance obligation which requires the injection of additional equity when necessary. Following an investigation by the European Commission it was determined that these guarantees represented potentially unfair government aid, resulting in the removal of these banks' guarantees removed in 2005. The advantage of the Landesbanken shock is that it represents a clear (negative) change in government guarantees that involves only German banks, which alleviates concerns about cross-country characteristics as well the potential for other confounding factors to influence our analyses. This shock is limited in terms of generalizability, however, because explicit guarantees are less common than implicit guarantees and the shock in question does not cover a broad cross-section of banks.

We measure earnings management behavior by examining banks' loan loss provisioning decisions. The loan loss provision represents perhaps the most important bank accrual (about 56% of total accruals, on average) and is highly correlated with income and capital ratios (Ahmed et al., 1999; Beatty and Liao, 2014). Banks have significant discretion in setting loan loss provision levels and there is a high degree of professional subjectivity

in estimating and auditing this amount.[2] Banks have incentives to use this accrual to defer or accelerate the recognition of earnings to smooth earnings in order to positively influence investors' and regulators' perceptions about bank risk (Greenawalt and Sinkey, 1988; Moyer, 1990; Scholes et al., 1990; Ahmed et al., 1999; Bushman and Landsman, 2010; Beatty and Liao, 2014). Following prior studies, we measure this type of earnings management behavior as the correlation between the loan loss provision and banks' earnings before this provision is accounted for, controlling for economic determinants of the loan loss provision. A positive correlation suggests that banks report a lower (higher) loss provision when earnings are lower (higher), consistent with earnings smoothing.[3]

We consider both pre-post differences and difference-in-differences research designs to estimate the relation between banks' earnings management behavior and the removal of government guarantees from the Landesbanken. We find no evidence of earnings management behavior for the Landesbanken prior to the removal of the government guarantees, consistent with government guarantees reducing these banks' incentives to do so. We do, however, find evidence that Landesbanken increase earnings management after the government guarantees were removed. In difference-in-differences analyses we find that Landesbanken increase earnings management behavior after controlling for changes in the reporting behavior of other German banks. These findings provide strong empirical support for our prediction that government guarantees reduce banks' earnings management incentives.

Our second set of analyses employ the creation of the Eurozone (i.e., adoption of the Euro, the creation of the European Central Bank (ECB), etc.) in 1999 as a proxy for an increase in implicit government guarantees. The development of the Eurozone was the culmination of decades of discussions and decisions made well before the 1999 implementation with the purpose of enhancing the political stability and economic integration of the region, suggesting that it likely to be an exogenous event with respect to banks financial reporting decisions.[4] Prior studies suggest that decreases in the credit risk of

[2]It is important to note that while under the incurred loss model bank managers cannot use their professional judgment to classify loans as non-performing, the reporting of loan loss provisions, as for any accrual, is subject to managerial judgment.

[3]Note that this empirical approach does not simply capture general volatility in earnings which likely depends on variation in banks' risk taking, but rather captures smoothing based on the reporting decision to vary the amount of the loan loss provision in connection with earnings prior to the provision expense.

[4]In a recent discussion for the Stigler Center at the University of Chicago (November 30, 2016), Nobel laureate Joseph Stiglitz described the Eurozone creation as "a natural experiment" and expressed the view that the project was a political project rather an than economic one.

sovereign bonds spill over onto the banking sector as a whole and strengthen implicit government guarantees (Gerlach, Schulz, and Wolff, 2010; Acharya, Drechsler, and Schnabl, 2014; Correa, Lee, Sapriza, and Suarez, 2014; Gandhi, Lustig, and Plazzi, 2016). The creation of the Eurozone improved the credit worthiness of member countries' sovereign bonds (e.g., convergence of interest rates and monetary union), consequently increasing government guarantees to the banking sector (Acharya, Drechsler, and Schnabl, 2012).

In addition, the creation of the Eurozone increased the importance of the banking sector because the costs of potential bank failures could jeopardize the future of the Eurozone project (Gerlach et al., 2010; Chinn and Frieden, 2012). We assert that the creation of the Eurozone increased the likelihood of banks receiving assistance (i.e., government support) either through lower interest rates or capital infusions. These capital infusions can come either through direct bailouts or indirectly through outside support for Eurozone members' sovereign debt to help these countries capitalize their banks. Ex post behavior confirms this assertion as Eurozone banks received lower interest rates and a significant amount of capital during the recent financial crisis (Hannon, 2016).[5]

The advantage of the Eurozone setting is that it represents a broad and economically important shock to implicit government guarantees. The disadvantage is that given the broad nature of the event it is possible that the creation of the Eurozone affected other bank specific or macroeconomic variables, apart from government guarantees, which could also affect banks' loan loss provision decisions. Thus, in addition to examining the relation the Eurozone creation and banks' earnings management, we also conduct a variety of empirical tests to consider whether this relation is likely to be motivated by factors other than increases in implicit government guarantees.

We define treatment banks as those that are headquartered in countries that were part of the initial creation of the Eurozone in 1999. We use several different control groups including other European countries that did not join the Eurozone. Similar to our analysis of the Landesbanken, we employ both a pre-post difference design that uses each treated bank as its own control and a difference-in-differences design. We find that Eurozone banks significantly reduced earnings management behavior following the creation of the Eurozone, consistent with increases in implicit government guarantees reducing their

[5]It should be pointed out that even though the bailouts in question were far from certain even just a few days before they were given, it is likely that the creation of the Eurozone shifted the probability distribution of bailouts. In particular, the creation of the Eurozone made the success of banks from one member country more important to other countries than they would have been without the Eurozone.

incentives to do so. We also find similar inferences when using non-Eurozone banks as a control group in a difference-in-differences analysis. Consistent with the high economic importance of the Euro adoption, we find that our results are economically significant and suggest an 81% reduction in earnings management behavior for treated banks, on average.

To help address concerns that our results are related to aspects of the Eurozone creation other than implicit government guarantees, we perform a variety of cross-sectional analyses to address potential alternative explanations for our results. Specifically, we find that our results regarding a decrease in earnings management behavior are unlikely to be related to decreases in bank risk taking, increases in bank performance, changes in macroeconomic conditions (e.g., credit boom), or a reduction in foreign exchange risk following the Euro adoption.

Altogether our findings make several contributions to prior literature. First, we contribute to the broader literature on the effects of government guarantees (e.g., O'Hara and Shaw, 1990; Flannery and Sorescu, 1996; Gandhi and Lustig, 2015; Kelly et al., 2016; Gandhi et al., 2016). Our results suggest that government guarantees influence banks' financial reporting behavior in particular with respect to earnings management behavior. This result highlights one potential unexplored contributing factor – higher quality financial reporting – for prior studies' findings that government guarantees improve banks' debt and equity valuations. These findings also relate to the literature on risk taking and government guarantees. Specifically, our results suggest that while banks might increase risk taking in response to government guarantees (Duchin and Sosyura, 2014; Gropp et al., 2013; Fischer et al., 2014) there is also a corresponding increase in the quality of their financial reporting (i.e., less earnings smoothing).

Second, we contribute to the literature on banks' disclosure decisions by identifying a previously unexplored factor in the determination of banks' disclosure quality. We show that government guarantees have a significant effect on banks' earnings management behavior, consistent with them having an important effect on bank managers' reporting incentives. One potential implication of our findings is that government guarantees allow investors to be more tolerant of the disclosure of bad news as managers have less incentive to manage earnings. Our results also suggest that future work on disclosure quality should consider the role of government guarantees for other settings and outcome measures.

Lastly, our findings should be of particular interest to regulators and governments in that we provide evidence regarding the externalities of government guarantees. While governments provide guarantees to reduce the potential size and scope of financial disasters, our results suggest that these guarantees also have spillover effects for the information environment of the banking sector. It is important to note, however, that reporting quality is just one element in the wide scope of banks' activities and our results do not address the overall effects of changes in banks' information environments on capital markets as a whole.

The remainder of the paper is organized as follows. Section 2 summarizes the literature on government guarantees and banks financial reporting behavior. Section 3 describes our model and its empirical predictions. Section 4 describes our research settings. Sections 5 and 6 present our data and analyses for the different empirical settings. Section 7 concludes.

2 Prior Literature

2.1 Government Guarantees and the Banking Sector

The role of government guarantees is an important topic that has been explored by scholars and policy makers. While government guarantees can apply to a diverse set of industries and business interests, in this paper we specifically focus on the role of government guarantees with respect to the debt and equity investments of capital market participants in the banking sector.[6] Government guarantees play a particularly important role in the banking sector because of the threat of economic contagion from problems arising within this sector. Banking-related crises, such as the recent financial crisis, can have severe negative effects for other businesses and sectors. To limit the size and scope of such financial disasters and to reduce the risks and volatility of the banking sector as a whole, governments and quasi-governmental entities sometimes provide banks both explicit and implicit guarantees.

Explicit guarantees are publicly recognized promises made by governments, ideally, to serve some societal purpose (e.g., stable banking sector). As these guarantees are

[6]We do consider the role of depositors or guarantees related to deposit insurance in our hypotheses or empirical analyses. Depositors in most developed countries consider a very different set of issues than investors in banks' debt and equity securities.

by definition contractual, they provide reasonable assurance to stakeholders' (e.g., debt and equity holders) that their investments will be protected according to specific terms and conditions. Implicit government guarantees are less formal and represent the most common type of government guarantees. While implicit guarantees involve greater uncertainty due to the lack of a formal contract, they are generally recognized as having an important impact on the banking sector. For example, it is generally believed that the US government will provide financial support to government sponsored entities such as Fannie Mae and Freddie Mac or to other important financial institutions. This support was evident for both debt and equity investors in the U.S. government's bailout of the financial sector following the recent financial crisis.[7]

Prior research finds that government guarantees have important consequences for the valuation of banks' equity and debt. O'Hara and Shaw (1990) investigate the effect of the Comptroller of Currency's announcement that some banks were "too big to fail" on bank equity values. They find that the simple labeling of "too big to fail" is associated with positive wealth effects for equity shareholders of banks included under the "total insurance policy" and is associated with negative effects for actively traded banks not included on the Comptroller of the Currency's statement (i.e., control banks). Flannery and Sorescu (1996) provide evidence that debt investors impound the value of implicit guarantees into bond prices as the U.S. government's willingness to absorb private debt losses changes over time.

Other studies provide evidence that government guarantees have pricing implications by showing that banks with more significant guarantees have lower adjusted stock returns (e.g., Gandhi and Lustig, 2015; Gandhi et al., 2016). Beyond these positive valuation effects from the standpoint of banks' stakeholders, there is also evidence that government guarantees relate to banks' risk taking behavior and the competitiveness of the banking sector (Stern and Feldman, 2004). Acharya and Yorulmazer (2007, 2008) suggest that government guarantees can lead banks to herd and acquire common risks. Gropp et al. (2011) provide evidence that bail-out perceptions are associated with an increase in risk-taking by the competitors of banks with government guarantees. Duchin and Sosyura (2014) find that bailed-out banks ex post initiate risker loans and shift assets toward riskier securities.

[7] https://www.treasury.gov/initiatives/financial-stability/TARP-Programs/bank-investment-programs/agp/Pages/default.aspx

Despite the importance of government guarantees for both bank pricing and real activities, there is little evidence regarding how government guarantees of debt and equity interests relate to banks' information environments or their financial reporting behavior, despite the importance of these reports to investors and regulators. We specifically consider how government guarantees relate to banks earnings management behavior.

2.2 Government Guarantees and Banks' Earnings Management

Banks' financial reports play a significant role in helping investors evaluate banks' financial performance (Beatty and Liao, 2014; Acharya and Ryan, 2016). Banks are highly leveraged, with debt usually reaching ninety percent of their capital structure. As leverage amplifies the effects of both good and bad news, it is critical to understand banks' financial performance and the riskiness of their loan portfolios. However, banks' financial reports are inherently more opaque than those of other sectors and there is considerable information asymmetry regarding the quality of their loan portfolios (Diamond, 1984; Boyd and Prescott, 1986; Morgan, 2002; Flannery et al., 2004, 2013).

A large body of research provides evidence that banks and other firms have incentives to use financial reporting discretion to report more favorable performance information in an effort to obtain better capital market outcomes. Banks in particular have incentives to manage performance information such as earnings because debt and equity investors use earnings information to assess future cash flows, risk, and ultimately the value of their current or future investments. Prior research on banks' earnings management often examines whether banks smooth earnings by saving potential current earnings for future periods (i.e., delayed recognition) when performance is good and borrowing potential earnings from future periods (i.e., accelerated recognition) when performance is bad (e.g., cookie jar reserves). Banks have incentives to follow this pattern to report smoother earnings in an effort to positively affect investors' perceptions of the underlying risk of the bank (Greenawalt and Sinkey, 1988; Graham, Harvey, and Rajgopal, 2005). In this case, lower risk expectations can lead to a more positive valuation by investors (Trueman and Titman, 1988).

3 Model and Testable Implications

3.1 Model

3.1.1 Initial Setup

We develop a simple model that illustrates how banks' earnings management decisions relate to government guarantees. We build on the model proposed by Trueman and Titman (1988), who examine a firm's decision to manage earnings by shifting income between periods in an attempt to alter investors' perceptions of the underlying riskiness a firm.

In this model we there are two stylized players: a bank manager and a representative outside investor. The investor estimates the bank's value in part based on the bank's reported earnings, which provide a noisy signal of *actual* economic earnings (i.e., earnings excluding earnings management). The bank's economic earnings are defined by the following stochastic process:

$$\tilde{x}_t = \mu + \epsilon_t \tag{1}$$

where the mean μ is known to both the manager and the investor but the actual process $\tilde{x}_t$ is only observed by the manager at time t. ϵ_t is distributed normally with a mean of zero and the variance depends on bank type. There are two possible types of banks: low variance ($Var[\epsilon_t] = \sigma_A^2$) and high variance ($Var[\epsilon_t] = \sigma_B^2 > \sigma_B^2$), where variance captures the riskiness of the bank. The bank manager knows her own type but the representative investor does not know this information. Instead, the representative investor forms an expectation about the probability of the bank being of type A (B) defined as p_A ($p_B = 1 - p_A$) before observing the bank manager's earnings disclosures. As in Trueman and Titman (1988), the assumption that the mean is known serves to simply the analysis and emphasize the effect of an uncertain variance on managers' earnings management decisions.

We consider a two period model where the goal of the bank manager is to maximize her proceeds obtained from issuing new debt securities to the representative investor at the end of period 2.[8] In our model the bank manager chooses the amount of earnings

[8]The fundamental differences between our framework and the one of Trueman and Titman (1988)

management to optimize the net benefit of this activity (i.e., capital market benefits minus costs arising from lack of financial transparency, investors' scrutiny, or taxation externalities).

After the realization of the economic profit at time 1 (x_1 is known to the manager but unobserved by the investor), the bank manager can choose what quantity s of the actual income above (or below) the expected value $E[\tilde{x}_t] = \mu$ to shift to period 2. Since new debt will be issued at time 2, reported income should comprise not only the actual economic performance (x_2) but also any delayed income from period 1 (either positive if $x_1 > \mu$ or negative if $x_1 < \mu$). In other words, reported income at periods 1 and 2 are given by:

$$x_1^s = (1 - s)x_1 + s\mu \tag{2}$$

$$x_2^s = x_2 - s(\mu - x_1) \tag{3}$$

where $0 \leq s \leq 1$.

Once x_1^s is reported, the representative investor updates her prior probability of the bank being of type A based on the observation of x_1^s and the publicly known properties of x_2^s (still to be reported). As in Trueman and Titman (1988), a simple application of Bayes' rule allows us to express the ex-post probability $p'_A(x_1^s, x_2^s)$ as

$$p'_A(x_1^s, x_2^s) = \frac{\Phi(x_1^s; \sigma_A^2)\Phi(x_2^s; \sigma_A^2)p_A}{\Phi(x_1^s; \sigma_A^2)\Phi(x_2^s; \sigma_A^2)p_A + \Phi(x_1^s; \sigma_B^2)\Phi(x_2^s; \sigma_B^2)p_B} \tag{4}$$

where $\Phi(x_1^s; \sigma_i^2), i = A, B$ represents the probability density function of a normal distribution whose mean is μ and variance is σ_i^2.

In an unambiguous setting where the representative investor is certain about the bank type being A (or B), the market value of the debt security to be issued is B_A (or $B_B < B_A$). As the investor observes the series of reported (managed) earnings and uses such signals

are twofold. First, we endogenize the amount of earnings management chosen by the bank manager given the capital market benefits and monitoring costs she faces. Second, we introduce the asset pricing effects of government guarantees as a censoring parameter to the left tail of the high variance bank. Trueman and Titman (1988) employ a binary earnings management decision and a constant cost, showing that if the accounting system allows managers to shift income from one period to another, the manager will engage in earnings smoothing as long as it is not costly. The purpose of this framework is to demonstrate the tension in our main hypothesis and we claim no significant contribution over Trueman and Titman (1988) in explaining why managers engage in earnings smoothing.

to infer the ambiguous underlying volatility of the bank's earnings, the market value of proceeds to be issued from the bank's debt is equal to

$$B\big(p'_A(x_1^s, x_2^s)\big) = p'_A(x_1^s, x_2^s)B_A + \big(1 - p'_A(x_1^s, x_2^s)\big)B_B \tag{5}$$

$$= p'_A(x_1^s, x_2^s)(B_A - B_B) + B_B \tag{6}$$

In other words, capital market benefits (to the bank manager) can be optimized by choosing a level of smoothing (i.e., earnings management) that maximizes the investor's posterior probability of the bank being of type A. Investors update their expected values of p'_A at the end of period 1 when x_1^s is reported and based on the distribution properties of the $\tilde{x}_2^s$ whose realization is still unknown. Therefore, the manager aims to maximize investors' expectations $E[p'_A(x_1^s, \tilde{x}_2^s)]$ by choosing s after she observes the actual value x_1.

We define the cost of earnings management activity as the function $K(s)$ and assume that this function represents the costs associated with a smoothing choice of s and is twice continuously differentiable in the interval $0 \leq s \leq 1$. We assume $K'(s) > 0$ as costs should be increasing in s if larger amounts of earnings management are associated with greater costs (e.g., higher detection risk). Since the bank manager chooses s to achieve the desirable effect on investors' expectations $E[p'_A(x_1^s, \tilde{x}_2^s)]$ and both x_1^s and x_2^s are a function of the actual earnings she observes (and her choice of s) we can substitute $p'_A(x_1^s, \tilde{x}_2^s) = y(x_1, \tilde{x}_2, s)$. The bank manager's optimization problem thus is described as

$$\begin{aligned} max \quad & E[y(x_1, \tilde{x}_2, s)](B_A - B_B) + B_B - K(s) \\ subject\ to \quad & 0 \leq s \leq 1 \end{aligned} \tag{7}$$

Disregarding corner solutions, the optimal level of smoothing chosen by the bank manager, i.e, $s^* = \arg\max E[y(x_1, \tilde{x}_2, s)](B_A - B_B) + B_B - K(s)$, must satisfy the following first and second order conditions:

$$\begin{aligned} F(x_1, s^*)(B_A - B_B) - K'(s^*) &= 0 \\ \frac{\partial}{\partial s} F(x_1, s^*)(B_A - B_B) - K''(s^*) &< 0 \end{aligned} \tag{8}$$

where $F(x_1, s) \equiv \frac{\partial}{\partial s} E[y(x_1, \tilde{x}_2, s)]$.[9]

[9]The existence of the internal solution is supported by the existence of an upper bound s_{max} satisfying $0 < s_{max} \leq 1$ for which the function $E[y(x_1, \tilde{x}_2, s)]$ is increasing in s for every $0 \leq s \leq s_{max}$. For a

3.1.2 Introducing Government Guarantees

Since we are ultimately interested in comparative statics of how the optimal level of earnings management s^* varies with the introduction of positive government guarantees, we now introduce effects of government guarantees into the model. Just as in Trueman and Titman (1988), the asset pricing effects $B_A - B_B > 0$ are exogenous to the model and reflect the representative investor's preferences towards risk.[10]

In our framework, we assume that government guarantees provide an extra layer of protection in states of extreme left tail realizations of economic profits. Consequently, the distribution parameters representing realizations of actual earnings (i.e., μ, σ_A, and σ_B) remain unaltered. The presence of government guarantees g, however, censors the left tail distribution of the random variable $\tilde{x}_2$, consequently altering the functional form of $F(x_1, s)$ (i.e., investor's subjective belief of the bank being of type A) and the difference $B_A - B_B > 0$.

As B_A and B_B reflect the representative investor's aversion to different sources of risk (including tail risk), it is reasonable to assume that for two different levels of government guarantees g_0 and $g_1 > g_0$, a type B bank benefits more than a type A bank as government guarantees increase from g_0 to g_1 (i.e., $(B_A(g_1) - B_B(g_1)) < (B_A(g_0) - B_B(g_0))$). For analytical simplification we assume no valuation effect for type A banks, leading to $B_A(g) \equiv B_A, \ \forall g$.

The analytical expression of $F(x_1, s)$ is altered to incorporate the censoring effect in the distribution of economic earnings $\tilde{x}_2$ that the bank manager observes.

$$F(x_1, s, g) = \quad ab \int_g^{+\infty} \Phi(e_2; \sigma_i^2) \left(\frac{g_A g_B f_A (f'_A - f'_B) + f_A f_B (g'_A g_B - g'_B g_A)}{d^2} \right) de_2 \qquad (9)$$

where $f_i = \exp\left(- \frac{((1-s)\psi)^2}{2\sigma_i^2} \right)$, $g_i = \exp\left(- \frac{(s\psi + e_2)^2}{2\sigma_A^2} \right)$, $i = A, B$ and $d = a f_A g_A + b f_B g_B$

In other words, government guarantees should affect $F(x_1, s, g)$ through the direct effect on the left tail of the earnings distribution (defined by the integration limit g) and through an indirect effect on the manager's endogenous choice of $s^* = s^*(g)$. To account for the potential effects of government guarantees on the monitoring incentives of capital providers, we allow the cost function to directly depend on g, in addition to its indirect

formal derivation, see Appendix A

[10] The pricing difference reflects the fact that the investor dislikes volatility, hence $\sigma_B > \sigma_A$ would lead to $B_A > B_B$, but such preferences are not directly modeled by a utility function.

dependence through $s^* = s^*(g)$. The first and second order conditions of the manager's optimization problem of choosing $s^*(g)$ become

$$\begin{aligned} F(x_1, s^*(g), g)(B_A - B_B) - K_s(s^*(g), g) &= 0 \\ \frac{\partial}{\partial s} F(x_1, s^*(g), g)(B_A - B_B) - K_{ss}(s^*(g), g) &< 0 \end{aligned} \tag{10}$$

Theorem 3.1. *Let g_0 and g_1 represent two different levels of government guarantees with $g_1 > g_0$ and $s^*(g_0)$, $s^*(g_1)$ be the respective optimal levels of income smoothing engaged by the bank manager. Assuming both $s^*(g_0)$, $s^*(g_1)$ to be internal solutions to the manager's optimization problem then if the (negative) effect of government guarantees on capital providers' monotoring incentives ($K_{sg}(s^*(g), g) < 0$) are negligible (i.e., $K_{sg} > -c$, $\forall g \in [g_0,\ g_1]$ for some $c > 0$), we must have $s^*(g_0) > s^*(g_1)$. In other words, the sign of $\frac{d}{dg} s^*(g)$ is given by*

$$\left(\frac{d}{dg} s^*(g)\right) \begin{cases} < 0 & \text{if } K_{sg}(s^*(g), g) > F_g(x_1, s^*(g), g)(B_A - B_B(g)) - \frac{B'_B(g) K_s(s^*(g), g)}{B_A - B_B(g)} \\ \geq 0 & \text{otherwise.} \end{cases}$$

Proof. From the first order condition of the bank manager's optimization problem we have

$$F(x_1, s^*(g), g) = \frac{K_s(s^*(g), g)}{B_A - B_B(g)} \tag{11}$$

Assuming the optimal smoothing function $s^* = s^*(g)$, and calling $F_s(x_1, s, g)$ and $F_g(x_1, s, g)$ the partial derivatives of function $F(x_1, s, g)$ with respect to its second and third arguments, we can differentiate the previous expression with respect to g and have

$$\begin{aligned} &F_s(x_1, s^*(g), g) \frac{d}{dg} s^*(g) + F_g(x_1, s^*(g), g) = \\ &\quad = \frac{K_{ss}(s^*(g), g) \frac{d}{dg} s^*(g) + K_{sg}(s^*(g), g)}{B_A - B_B(g)} + \frac{B'_B(g) K_s(s^*(g), g)}{\left(B_A - B_B(g)\right)^2} \end{aligned}$$

Simple algebraic manipulations lead to the following expression:

$$\Big\{F_s(x_1, s^*(g), g)(B_A - B_B(g)) - K_{ss}(s^*(g), g)\Big\}\frac{d}{dg}s^*(g) =$$
$$= \underbrace{\frac{B'_B(g)K_s(s^*(g), g)}{B_A - B_B(g)} - F_g(x_1, s^*(g), g)(B_A - B_B(g))}_{Marginal\ benefit\ (>0)} + \underbrace{K_{sg}(s^*(g), g)}_{Marginal\ cost\ (<0)} \tag{12}$$

The right-hand side of the previous equation is comprised of one expression representing the effect of government guarantees on the marginal benefits of earnings smoothing and another representing the marginal costs of such guarantees (due to decreasing monitoring of stakeholders). The marginal benefit term is strictly positive since we have $K'(s) > 0$ for every $0 \leq s \leq 1$, $B'_B(g) > 0$ and $B_A > B_B(g)$, and the derivative with respect to g, $F_g(x_1, s, g)$ is negative (lower limit of integration as shown in equation (9)). Moreover, the expression in brackets on the left-hand side is strictly negative since it is represents the second order conditions evaluated at the optimal $s^*(g)$ (expression (10)). Thus, if the right-hand side of (12) is positive, then we must have $\frac{d}{dg}s^*(g) < 0$ — i.e., government guarantees reduce the optimal level of earnings management. □

3.2 Testable Implications

Figure 1 illustrates the economic intuition of our main hypothesis in a stylized fashion that is consistent with the predictions of the model. Figure 1.a depicts the distribution of the underlying value of a bank (seen by the manager but not by its capital providers) absent any form of government guarantees. The manager then chooses the optimal level of earnings smoothing s^* based on the marginal benefits and costs, hence reporting earnings with a smoother distribution (Figure 1.b). The introduction of government guarantees alters the distribution of the firm's underlying value, changing it from Figure 1.a to Figure 1.c. This is consistent with prior research that documents asset pricing effects of government guarantees on different bank securities, including equity (O'Hara and Shaw, 1990; Gandhi and Lustig, 2015), debt (Flannery and Sorescu, 1996), and option prices (Kelly et al., 2016). Consequently, the equilibrium amount of earnings smoothing (denoted by $s^*(g)$) is reduced as suggested by Theorem 3.1. Thus, we predict that government guarantees decrease banks' earnings management behavior.

Our prediction is not without tension for at least two reasons. First, as government

guarantees are cash infusions in high marginal utility states, they inherently transfer risk away from investors (to the government), therefore reducing their incentives to monitor banks' activities and financial reporting (Acharya et al., 2016), possibly leading to increased earnings management behavior. In our model, this would occur whenever the decrease in marginal costs of earnings smoothing is economically larger than the marginal benefits received by investors (see Theorem 3.1). Second, government guarantees provide incentives for banks to increase their endogenous risk taking behavior, which could lead to greater incentives for banks to manage earnings, as suggested by prior research (Duchin and Sosyura, 2014; Gropp et al., 2013; Fischer et al., 2014). It should be noted, however, that Gropp et al. (2011) find that government guarantees increase the risk-taking behavior of competitor banks rather than that of protected banks, suggesting that this effect may not be present.

4 Empirical Research Setting

Although there is an extensive literature on government guarantees, directly assessing these guarantees is an empirical challenge. Changes in government guarantees are infrequent and often affect entire countries at the same time, making it difficult to address correlated omitted variable problems. To help address these concerns we choose to test our hypothesis using two quasi-natural experiments that likely represent plausible exogenous shocks to the level of government guarantees: (i) the removal of explicit guarantees from the Landesbanken in Germany and (ii) the formation of stronger implicit guarantees in connection with the creation of the Eurozone.

4.1 Landesbanken

The German banking system is essentially comprised of the following types of banks: private-sector commercial banks, state-owned banks (Landesbanken and savings banks) and cooperative banks.[11] Landesbanken are a group of internationally-operating wholesale banks, each of which is affiliated with one or more German federal states. They were established in the 19th century with the objective of promoting regional development.

[11] For additional information regarding the banking sector in Germany, see Gropp et al. (2013), Fischer et al. (2014) and Baron (2016).

For most of their history, Landesbanken were granted two layers of government guarantees: an explicit guarantee of all liabilities ("Gewährträgerhaftung") and a maintenance obligation which requires owners to inject additional equity capital when necessary ("Anstaltslast"). However, in 2001, the German government together with the European Commission agreed to stop guaranteeing new debt issuances starting 2005.[12] In other words, in 2005 the government explicitly removed these guarantees. Accordingly, we use this plausibly exogenous reduction in government guarantees as an empirical setting to test the effects of government protection on banks' earnings management behavior.

Using the Landesbanken setting has some important empirical advantages. First, this setting represents a clear shock to government guarantees. Prior to 2005, Landesbanken had the ability to issue debt that was explicitly guaranteed by the German government while the other German commercial banks did not have this advantage. In 2005, however, the Landesbanken lost these guarantees, making them more like other German banks.[13] Second, this setting allows us to restrict our attention to banks in a single country, alleviating concerns that cross-country characteristics act as correlated omitted variables. There are, however, limitations to this setting. Explicit guarantees are less common than implicit guarantees and governments may avoid them for political reasons. In addition, the Landesbanken setting involves state-owned banks, who may respond to changes in government guarantees to a different degree than other banks.[14] Thus, while the removal of explicit government guarantees from the Landesbanken likely provides an empirical setting with strong internal validity, the results may have less external validity and may not generalize to all banks. Thus, we also consider an empirical setting involving implicit guarantees - the Eurozone Creation.

[12]For a detailed description of the event see "Brussels Agreement" that passed on July 17, 2001. The economic and political facts that led to this removal relate to past complaints from German commercial banks that such guarantees provided a competitive advantage to Landesbanken. Commercial banks argued that guarantees represented state aid, therefore violating Article 47 of the European Union treaty.

[13]We note that Germany made IFRS reporting standards mandatory in 2005, however, almost all German banks voluntarily adopted these standards several years prior to this date (Gebhardt and Novotny-Farkas, 2011). Moreover, Gebhardt and Novotny-Farkas (2011) find that IFRS adoption is associated with less earnings smoothing, which works against our predictions. However, we also conduct a difference-in-differences analysis to address this potential concern.

[14]While Landesbanken are state-owned, their common equity is held both by governments of German states and private-sector investors. Although the equity held by private investors is not publicly traded, the presence of such investors can be associated with managers' incentives to engage in earnings management.

4.2 Eurozone Creation

In 1999, 11 European countries formally created the Eurozone by adopting the Euro as their common currency and creating the European Central Bank (ECB). The Eurozone was conceived in order to achieve financial stability within the region, as well as to enhance economic integration and trade among its countries.[15] The ECB administers monetary policy for the Eurozone, holds and manages foreign reserves for member states, and promotes smooth operation of payment systems.[16]

We have several reasons - academic and anecdotal - to assert that the creation of the Eurozone led to the formation of stronger implicit guarantees for banks headquartered in member countries. The notion that implicit guarantees granted to sovereign countries spill over onto the banking sector has been theoretically demonstrated (Acharya et al., 2014) and empirically supported by a large sample of banks from different countries (Correa et al., 2014; Gandhi et al., 2016). The creation of the Eurozone - through the adoption of a sole currency and convergence of sovereign interest rates to German rates - represents a clear example of implicit guarantees granted to sovereign bonds of the country members. In fact, the magnitude and geopolitical importance of the event represents a shift in the relative importance of individual banking systems to the monetary union and to the global economy (Chinn and Frieden, 2012). Ex post behavior in the wake of the financial crisis corroborates the notion that investors believed they had implicit government guarantees for their investments in the banking sector. The ECB lowered interest rates and contributed significant amounts of capital to provide bailouts for banks in Greece, Ireland, Portugal, Spain, and Cyprus (Hannon, 2016).[17] However, even before these actions were announced investors arguably believed that major banks across Europe enjoyed an implicit government guarantee simply because of the economic importance of the Eurozone and the dire consequences of allowing the banking sector to experience a systematic failure (Gerlach et al., 2010). The later Eurozone crisis also provides anecdotal examples of how the deterioration of the fiscal stability of peripheral countries affected

[15] For a timeline description of the relevant events that culminated to the creation of the Eurozone see Appendix B

[16] Prior studies consider the economic benefits of the Euro through increased capital market integration and increased growth opportunities (e.g., Micco et al., 2003; Rajan and Zingales, 2003; Bekaert et al., 2013; Jayaraman and Verdi, 2014).

[17] The later event of the ECB and the IMF lending money to the governments of Portugal, Ireland and Spain to help these countries to recapitalize their banks illustrates the spillover of implicit guarantees to sovereign debt providing the fiscal backing for individual banks' bailouts.

the credit risk of their major banks (Acharya et al., 2012).

In terms of empirical design, the Eurozone creation is a particularly advantageous research setting because it naturally lends itself to differences and difference-in-differences research designs. Although there are currently 28 member states in the European Union, only 11 of those members entered the Eurozone in 1999. This scenario creates a natural exogenous shock to analyze the loan loss provisioning behavior of banks. We argue that this setting is a plausibly exogenous shock to banks at the time of its implementation because the creation of the Eurozone was driven by political and economic factors in place long before its adoption.[18] The idea of a common European currency has been discussed for decades but it was only consolidated after the Maastricht Treaty was signed in 1992. The limitations of this setting are that the Eurozone creation is likely to be related to macro-economic changes for European countries beyond increases in implicit government guarantees. These changes could be associated with factors such as cross-country changes in financial performance and risk taking behavior. Thus, additional empirical analyses are needed to evaluate whether results are attributable to these factors. While the Euro creation setting provides an example of changes to implicit government guarantees that are more common and generalizable, it is more limited than the Landesbanken setting in terms of internal validity (i.e., identification).

5 Empirical Analysis of the Landesbanken Setting

5.1 Sample Selection

We start our sample selection by identifying the Landesbanken that operated at the 2001 fiscal year end. This procedure is accomplished by starting from the sample of Landesbanken from Fischer et al. (2014) and later checking for corporate news articles to identify any subsequent merger or acquisition activity that altered the original sample of Landesbanken. This algorithm yields a final sample of 10 unique Landesbanken which are

[18] We do not exploit the staggered adoption of the Euro by other countries in subsequent years (e.g., Greece in 2001) for several reasons. First, following the creation of the Eurozone in 1999, governments of countries aspiring to join the monetary union may have improved their fiscal conditions to facilitate their acceptance. Improved fiscal conditions not only could be associated with stronger implicit guarantees even before their later acceptance, but as bank managers anticipate their countries joining the Eurozone the arguments for the staggered adoption as quasi-natural experiments are weakened. Last, banks headquartered in later Euro adopters represent a very small sample, therefore imposing an additional challenge to infer significant statistical associations.

depicted in Table 1, Panel A.[19] We obtain all bank-specific financial data from Bankscope and the relevant macroeconomic variables are obtained from the World Bank Database and Datastream.

– INSERT TABLE 1 ABOUT HERE –

5.2 Removal of Government Guarantees and Banks' Earnings Management

To examine the relation between goverment guarantees and banks' earnings management activity we focus on banks' loan loss provisions, which are an important feature of banks' financial reports. The loan loss provision (LLP) is the largest and most important bank accrual. The ratio of LLP to total accruals is around 56% on average (Beatty and Liao, 2014) and has a high correlation with banks' net income and regulatory capital (Ahmed et al., 1999). This accrual recognizes the degree to which a bank's loans have lost value due to customer defaults or renegotiation. Banks have significant discretion in setting loan loss provision levels and there is a high degree of subjectivity in estimating and auditing this amount.

A significant number of studies investigate banks' earnings management by considering banks' use of loan loss provisioning to smooth earnings (e.g., Greenawalt and Sinkey, 1988; Beatty et al., 1995; Collins et al., 1995; Laeven and Majnoni, 2003; Bikker and Metzemakers, 2005; Liu and Ryan, 2006; Fonseca and González, 2008; Pérez et al., 2008; Gebhardt and Novotny-Farkas, 2011; Bushman and Williams, 2012, 2015). While the specific control variables employed in empirical analyses vary by paper, setting, and data availability, all of these prior studies capture a bank's earnings management behavior by estimating the association between the bank's loan loss provision and its earnings before loan loss provisions and taxes (see Collins et al., 1995; Fonseca and González, 2008; Beatty and Liao, 2014).

The intuition for this approach is that earnings before the loan loss provision should not be related to the provision for loan losses after controlling for other determinants of loan losses. When earnings before this provision are higher, banks can use the provision to defer the recognition of earnings to a future period and vice versa. This measure of

[19] In 2003 LB Schleswig-Holstein Kiel merged with Hamburgische Landesbank to form HSH Nordbank.

loan loss provision smoothing is not a function of the level of the loan loss provision per se, but rather the relation between the loan loss provision and earnings before the loan loss provision. If banks' manage earnings in this way using the loan loss provision, we expect a positive relation between the loan loss provision and earnings before the loan loss provision. That is, banks would recognize higher (lower) expenses when earnings are higher (lower) to report smoother earnings. This empirical approach does not simply capture general volatility in earnings which likely depends on variation in banks' risk taking, but rather captures smoothing based on the reporting decision to vary the amount of the loan loss provision in connection with earnings prior to the provision expense.

We follow this empirical approach by employing the following regression model:

$$llp_{i,t} = \beta_0 + \beta_1 \times Ebllp_{i,t} + \sum_j \beta_j \times X^j_{i,t} + \epsilon_{i,t} \tag{13}$$

where $llp_{i,t}$ is bank i's loan loss provision for year t scaled by lagged total loans, $Ebllp_{i,t}$ is earnings before loan loss provisions and taxes scaled by lagged total loans, and $X_{i,t}$ is a vector of control variables $X^j_{i,t}$. We control for bank size ($Size_{i,t-1}$) using the natural logarithm of the bank's dollar-nominated total assets (millions USD) to account for variation in regulatory scrutiny and monitoring. We control for loan growth ($\Delta Loan_{i,t}$), measured as the change in loans scaled by assets, because the loan loss provision may rise as banks extend more credit to potentially lower quality clients. We control for variation in banks' capital structure ($CAP_{i,t-1}$), measured as total equity divided by total assets. We include the percent change in annual per capita GDP ($\%\Delta PerCapitaGDP_{c,t}$) to control for variation in macroeconomic performance. We also include year fixed effects. Ideally, we would also control for changes in non-performing loans as some banks use both forward and past information in estimating loan loss provisions. However, these data are not widely available for German banks until after 2007. Instead, we follow Fonseca and González (2008) and include controls for the prior two years loan loss provisions ($llp_{i,t-1}$ and $llp_{i,t-2}$) to control for trends in changes in risk. We also include year fixed effects. Table 1, Panel B reports the descriptive statistics and correlations for these variables.

5.3 Difference Estimation

To evaluate whether the removal of government guarantees relates to changes in the earnings management behavior of the Landesbanken, we first use a difference estimation approach using the Landesbanken as their own control. We conduct this analysis by augmenting equation (13) into the following equation:

$$\begin{aligned} llp_{i,t} = \; & \beta_0 + \beta_1 \times Ebllp_{i,t} + \beta_2 \times Post2005_t + \beta_3 \times Ebllp_{i,t} \times Post2005_t \\ & + \sum_j \beta_j \times X^j_{i,t} + \epsilon_{i,t} \end{aligned} \tag{14}$$

where $Post2005_t$ equals one for fiscal years after the 2005 removal of the government guarantees. We predict that β_3, the coefficient on will be $Ebllp_{i,t} \times Post2005_t$, will be positive if the removal of government guarantees increases banks' incentives to manage earnings via the loan loss provision. Table 2 reports the results of estimating equation (14). Standard errors, reported in parenthesis, are clustered at the individual bank level.

– INSERT TABLE 2 ABOUT HERE –

Consistent with our predictions, we find that the coefficient on $Ebllp_{i,t} \times Post2005_t$ is positive and significant, suggesting that Landesbanken increased earnings management activity after the 2005 removal of their government guarantees. Interestingly, we find that the coefficient on $Ebllp_{i,t}$ is not statistically significant, which is inconsistent with Landesbanken using the loan loss provision to manage earnings during the period in which the government guarantees were active. These findings are consistent with government guarantees reducing banks' incentives to manage earnings.

5.4 Difference-in-Differences Estimation

The results of the difference estimation approach in Table 2 report an economically and significant change in the earnings management activity of Landesbanken after the removal of government guarantees. However, one possible concern with this approach is that it does not account for potential correlated omitted variables that vary in time simultaneously with the removal of the guarantees. While we are not aware of any such specific factor, we further conduct a difference-in-differences (DID) analysis to help reduce these concerns.

A DID analysis requires that we select a control group of banks, preferably banks that were not affected by the 2005 removal of the guarantees for our treatment group. We employ a sample of commercial banks operating in Germany at the same time as the Landesbanken.[20] To control for potential differences in regulation, monitoring, and operating activities we limit the control sample to banks with a minimum of five billion dollars (USD) assets.[21] This requirement eliminates small banks from the control sample that would likely be very different than the Landesbank. Table 1, Panel B reports the descriptive statistics for the control sample.

To conduct the DID analysis we augment the model in (14) and estimate the following regression model:

$$\begin{aligned} llp_{i,t} = \; & \beta_0 + \beta_1 \times Ebllp_{i,t} + \beta_2 \times Post2005_t + \beta_3 \times Ebllp_{i,t} \times Post2005_t \\ & + \beta_4 \times Landesbank_i + \beta_5 \times Post2005_t \times Landesbank_i \\ & + \beta_6 \times Ebllp_{i,t} \times Landesbank_i + \beta_7 \times Ebllp_{i,t} \times Post2005_t \times Landesbank_i \\ & + \sum_j \beta_j \times X^j_{i,t} + \epsilon_{i,t} \end{aligned} \tag{15}$$

where $Landesbank_i$ is an indicator variable set to one if an observation is from the treatment group and zero otherwise. The primary coefficient of interest is β_7 on $Ebllp_{i,t} \times Post2005_t \times Landesbank_i$, which measures the relative change in earnings management for Landesbanken compared to the control sample.

Table 3 reports the results of estimating equation (15). Consistent with our predictions and previous results, we find that the coefficient on $Ebllp_{i,t} \times Post2005_t \times Landesbank_i$ is positive and significant, suggesting that Landesbanks increase earnings management activity more than the control sample following the 2005 removal of government guarantees from the Landsbanks. Overall, our results based on the Landesbanken sample support our predictions and provide strong empirical support for a relation between government guarantees and banks' earnings management behavior. One limitation of using the Landesbanken sample is that explicit government guarantees of this nature are less common than implicit guarantees and it is not clear whether these results generalize to banks in

[20] The choice of German commercial banks as the control group for the setting is also considered by Gropp, Gruendl, and Guettler (2013)

[21] Our results are robust to different choices of threshold values (e.g., $ 2.5 billion and $ 10 billion, untabulated).

general. As such we next consider how changes in implicit government guarantees created by the creation of the Eurozone relate to banks' earnings management behavior.

– INSERT TABLE 3 ABOUT HERE –

6 Empirical Analysis of the Creation of the Eurozone

6.1 Sample Selection

As argued in Section 4, although initial discussions regarding a monetary union of European countries dated from the 1960's the official date in which the unified currency was officially introduced was January 1st, 1999. Being consistent with the scope of our work as an event study, we focus our analysis on the time period before and after the creation of the Eurozone using the period 1996 to 2001. This allows us to employ a balanced panel of pre- and post-event observations to gauge the effect of the Eurozone creation on bank's loan loss provision smoothing while still reasonably isolating the effects of any macro-economic or country specific events that may confound our inferences.

We obtain all bank-specific financial data from Bankscope and the relevant macroeconomic variables are obtained from the World Bank Database and Datastream. Since the goal of this analysis is to examine the effect of the creation of the Eurozone on banks' discretionary use of loan loss provisioning, we restrict our data to include only financial institutions (both private and public) primarily engaged in lending activities. Specifically, we include in our sample bank holding companies, commercial banks, cooperative banks, group finance companies, and savings banks.

We start our sample selection by focusing on banks headquartered in the 11 countries that first adopted the Euro in January 1999 (Austria, Belgium, Finland, France, Germany, Ireland, Italy Luxembourg, Netherlands, Portugal and Spain, as reported in Table 4). This set of First Euro Adopters - FEA hereafter - comprises our main treatment group for the remainder of this analysis. We require banks to have financial data covering at least three years and total assets greater than 100 million USD. We trim the normalized bank-specific data at the 1% and 99%. We also require constant pre- and post- samples for banks headquartered in FEA countries. Table 4, Panel A describes how the successive filters applied to the Bankscope data affect the number of observations for the treatment

group and Table 4, Panel B reports descriptive statistics and correlations for the variables used in our analyses.

– INSERT TABLE 4 ABOUT HERE –

6.2 Difference Estimation

Our empirical analysis in this section focuses on the effect of the creation of the Eurozone on the earnings management behavior of banks headquartered in First Euro Adopter countries (treatment group only). We follow the same approach employed in Section 5 for the Landesbanken analysis and augment equation (13) with the inclusion of a post-1999 term (i.e., post-Euro creation) to examine how banks' earnings management differs after the creation of the Eurozone. Specifically, we estimate the following regression model:

$$\begin{aligned} llp_{i,t} = \; & \beta_0 + \beta_1 \times Ebllp_{i,t} + \beta_2 \times Post1999_t + \beta_3 \times Ebllp_{i,t} \times Post1999_t \\ & + \sum_j \beta_j \times X^j_{i,t} + \epsilon_{i,t} \end{aligned} \tag{16}$$

We employ two different sets of control variables X for robustness reasons. The first model (M1) employs the same controls as in equation (13) . As data on non-performing loans are available for many of the banks in this sample in our second model (M2) we also consider changes in non-performing loans as important controls (Beatty and Liao, 2014). Specifically we include $\Delta NPL_{i,t}$, $\Delta NPL_{i,t-1}$ and $\Delta NPL_{i,t-2}$ measured as the change in non-performing loans divided by total assets, in place of the lags for the loan loss provision to control changes in loan risk. Both models also include year, bank-type (bank holding companies, commercial banks, cooperative banks, group finance companies, and savings banks), and country fixed effects

– INSERT TABLE 5 ABOUT HERE –

Table 5 reports the results of estimating equation (16). Standard errors, reported in parenthesis, are clustered at the individual bank level. Columns 1 and 2 report the results using the different control variable approaches for models (M1) and (M2), respectively. The results in both Columns 1 and 2 indicate that the difference estimators' specification yields a positive coefficient estimate on $Ebllp_{i,t}$ (statistically significant to the 1% level)

and a negative estimate on $Ebllp_{i,t} \times Post1999_t$ (statistically significant to the 5% level). The negative coefficient on $Ebllp_{i,t} \times Post1999_t$ suggests that banks' reduced earnings management behavior following the adoption of the Euro, consistent with increases in implicit government guarantees reducing banks' earnings management incentives. In terms of economic significance, the results suggest that earnings management behavior is reduced by about 88% (0.110/0.125) for model (M1) and 81% (-0.085/0.104) for model (M2).[22]

To mitigate potential concerns that our results are related to factors occurring prior to the Eurozone creation in 1999, we also conduct two placebo tests by estimating model (16) altered to comprise terms of $Post1998_t$ and $Post1997_t$, respectively (these variables take values of 1 if $t \geq 1998$ and $t \geq 1997$ and zero otherwise). For the "1998 placebo test" we select our bank-year observations from 1995 to 2000 and for the "1997 placebo test" the time window ranges from 1994 to 1999. Estimates of the interaction terms of the placebo specifications for both 1998 and 1997 are not statistically significant (also reported in Table 5). These results are consistent with the hypothesis that the Eurozone introduction decreased banks' incentives to manage earnings, rather than some other factor starting prior to the event.

6.3 Difference-in-Differences Estimation

The results of the difference estimators approach (equation (16)) report an economically and statistically significant reduction in the banks' earnings management behavior coinciding with the creation of the Eurozone and additional tests suggest that this effect does not begin in periods prior to the event. However, a possible concern with these analyses is that that they do not account for potential economic factors that vary in time simultaneously with the establishment of the Eurozone. One factor that mitigates this problem is that the economic issues that led to the adoption of the Euro occurred at a much earlier time period and the actual implementation date was set years in advance. Nevertheless, we conduct additional analyses to address this issue by employing a difference-in-differences (DID) approach.

We employ three different control groups in our DID approach. Our main control

[22] To mitigate concerns that our sample is largely comprised by Italian banks we re-estimate both models excluding bank-year observations from Italy. Results (untabulated) are statistically and economically significant.

group uses bank-year observations from European nations that never adopted the euro (Never Euro Adopters or NEA).[23] We expect banks from these countries to be more similar to FEA banks than banks from non-European nations as European economies present a high degree of interconnectivity and are subject to common set of risk factors. Additionally, we augment our control sample by (i) including also bank year observations from Australia, Canada and Japan (ACJ hereafter) and (ii) also including observations from the U.S.[24]

We augment the model in equation (16) and estimate the following DID regression model:

$$\begin{aligned} llp_{i,t} = \; & \beta_0 + \beta_1 \times Ebllp_{i,t} + \beta_2 \times Post1999_t + \beta_3 \times Ebllp_{i,t} \times Post1999_t \\ & + \beta_4 \times FEA_i + \beta_5 \times Post1999_t \times FEA_i \\ & + \beta_6 \times Ebllp_{i,t} \times FEA_i + \beta_7 \times Ebllp_{i,t} \times Post1999_t \times FEA_i \\ & + \sum_j \beta_j \times X^j_{i,t} + \epsilon_{i,t} \end{aligned} \tag{17}$$

FEA_i is an indicator variable that takes value of 1 if the bank-year observation is headquartered in any of the 11 countries that adopted the Euro in 1999 and 0 otherwise. We interact this measure with $Ebllp_{i,t}$, $Post1999_t$, and $Ebllp_{i,t} \times Post1999_t$ to add additional terms that allow us to measure our treatment effect relative to changes in the control bank observations overs the same time period. Table 4, Panel A reports the number of observations from each country for the control groups and Table 4, Panel B reports their descriptive statistics and correlations for the variables used in our analysis.

Table 6 reports the results from estimating equation (17). Our main coefficient of interest (treatment effect only on the treated) is that corresponding to $Ebllp_{i,t} \times FEA_i \times Post1999_t$ (or the β_7 estimate of equation (17)). When considering model (M2) we find

[23]The NEA main control group is listed in Table 4, Panel A, with numbers within (without) parenthesis showing valid observations when considering model specification M2 (M1). Following the first adopters the following countries joined the Euro in different years: Greece (2001), Slovenia (2007), Malta (2008), Cyprus (2008), Slovakia (2009), Estonia (2011), Latvia (2014) and Lithuania (2015) - all of them adopting the currency on January 1st of those respective years. We exclude later adopters of any period from our control sample as banks from these countries may have increased earnings smoothing in order to facilitate their acceptance to the Eurozone.

[24]The advantage of the differences-in-differences estimation for this setting is at we only need to ensure the assumption of parallel trends on the smoothing coefficients for treatment and control groups is satisfied. We do not include Hong Kong as any of our control countries since the passage from the U.K. administration to China happened contemporaneously to our event study (specifically in 1997).

that this coefficient is negative and statistically significant at the 5% level regardless of our choice of of control sample and economically significant (corresponding to 90.6%, 89.7% and 85% reduction in earnings management before the shock for the treatment group, respectively for control groups of European countries, European augmented by ACJ and European augmented by ACJ plus the U.S.).[25] Similar results (in terms of economic magnitude and statistical significance) are also obtained for the three choices of control groups for model (M1). Statistically insignificant coefficient estimates of $Ebllp_{i,t} \times Post1999_t$ fail to provide evidence that the Euro adoption affected banks from our control groups in any of the three sets of control banks and regardless of our choice of empirical model.[26]

– INSERT TABLE 6 ABOUT HERE –

6.4 Alternative Explanations

Unlike our analysis of the Landesbanken in Section 5, the creation of the Eurozone is likely to be related to more than just changes in implicit government guarantees, suggesting it is possible that alternative mechanisms could be driving our results in this section. The creation of the Eurozone is a very significant event for member countries and could potentially have direct consequences for banks' performance, and foreign currency exchange risk. In this section, we provide additional evidence to explore whether these channels are likely to be driving our results.

6.4.1 Decrease in Banks' Risk Taking Behavior, Improved Economic Performance, and Macroeconomic Changes

One alternative mechanism that could explain the reduction in banks' earnings management behavior associated with the creation of the Eurozone is the possibility that banks decreased their risk taking behavior at the same time. As the monetary union increased

[25] To mitigate concerns that for the control group only comprised by European countries we have few bank-year control observations relative to the treatment group we also perform a propensity score matching analysis considering a 1-1 match with no replacement based on covariates $Size_{i,t-1}$ and $CAP_{i,t-1}$. Results (untabulated) are economically and statistically significant (p-value less than 1%).

[26] To further address concerns that the analysis in Table 6 is potentially confounded by cross-country differences, we conduct an additional set of analyses using only Scandinavian countries, where we assume these differences to be less significant. Appendix Appendix C reports these analyses. Our inferences are unchanged when compared to those from Table 6.

economic integration of member countries (Micco et al., 2003; Rajan and Zingales, 2003), it is possible that banks started taking less risk and, consequently, reduced their earnings management practices. While we control for changes in the credit risk of banks' loan portfolios in our regression analyses, it is possible that other components of banks' risk taking, such as market risk and operational risk, were reduced in connection with the monetary union.

To examine changes in banks' risk taking practices we first conduct a simple differences-in-differences estimation by separately examining whether the following bank-specific risk and performance proxies vary after the creation of the Eurozone: (a) the bank's tier 1 capital ratio; (b) the bank's total regulatory capital ratio; (c) the bank's interbank ratio (i.e., interbank assets divided by interbank liabilities). Specifically, we estimate the following regression model:

$$y_{i,t} = \beta_0 + \beta_1 \times FEA_i + \beta_2 \times Post1999_t + \beta_3 \times Post1999_t \times FEA_i + \epsilon_{i,t} \qquad (18)$$

where $y_{i,t}$ is the proxy of interest. We are interested on the interaction term $Post1999_t \times FEA_i$, which indicates whether $y_{i,t}$ changed after the Eurozone creation for the member countries.

Table 7 reports the results of this analysis. The treatment effect estimates for the Tier 1 Capital Ratio and the Total Regulatory Capital Ratio indicate that after the Euro adoption banks located in Euro adopter countries actually reduced their regulatory ratios, suggesting that perhaps they became riskier from a regulatory standpoint. Consistent with a higher risk taking behavior, interbank ratios also decreased, which means that banks became liquidity takers to a greater extent than providers after the Eurozone creation. In fact, lower Interbank Ratios indicate that banks became more subject to liquidity shocks. These results suggest that our results are unlikely to be driven by banks' decreased risk after the creation of the Eurozone.

We next explore whether our results are likely to be driven by improved financial performance. Specifically, one alternative explanation for why the creation of the Eurozone could lead to a reduction in earnings management behavior is that higher performance due to enhanced economic integration lowered banks' incentives to manage earnings (i.e., higher and more stable earnings). To consider this possibility, we further examine whether the creation of the Eurozone is associated with changes in bank's earnings before loan

loss provisions and taxes (scaled by lagged total assets), return on average assets (ROA), and return on risk-weighted assets (RORWA). These results are also reported in Table 7.

We find that the banks in FEA countries have lower earnings before loan loss provisions, but fail to find any evidence of changes in performance in connection with the creation of the Eurozone. We find evidence of a statistically and economically significant increase in bank's return on average assets, which could be associated with an increase in risk taking activities (i.e., higher risk, high return), however, this result disappears when computing the return on risk-weighted assets.

– INSERT TABLE 7 ABOUT HERE –

While the results reported in Table 7 are inconsistent with a decrease in banks' risk taking behavior, it could still be the case that our results are driven by macroeconomic factors such as a credit boom (i.e., greater diversity in loans leading to lower risk) or other forms of portfolio risk that relate only to the treatment observations. To help address these possibilities, we repeat our analysis in Table 5 after including additional controls. Specifically, we re-estimate the difference estimator in model (M2) by adding different control variables $C_{i,t}$ as linear term and interaction terms with $Ebllp_{i,t}$ and $Ebllp_{i,t} \times Post1999_t$.[27]

We use the percentage change in the country-level credit divided by GDP (provided by the World Bank) to capture the potential for a bank's country to have a credit boom. We follow Laeven and Levine (2009) to estimate a measure of a bank's risk taking ($RISK_{i,t}$). For each bank-year observation we compute a z-score measure as $Z_{i,t} = (ROAA_{i,t} + CAP_{i,t})/\sigma_{i,t}^{ROAA}$, where $\sigma_{i,t}^{ROAA}$ is the time series standard deviation of a bank's return on average assets, computed within a rolling window of three years. We then define $RISK_{i,t} = -log(Z_{i,t}) + K$ to to make the measure increasing on risk and translate it by adding a constant K to ensure $RISK_{i,t}$ is strictly positive. Finally, to capture differences in banks' loan risk profiles, we consider the interaction terms of $Ebllp_{i,t}$ and $Ebllp_{i,t} \times Post1999_t$ with $\Delta NPL_{i,t}$ and $\sigma_{i,t}^{\Delta NPL}$, where the latter is the time series standard deviation of a three year rolling window of $\Delta NPL_{i,t}$ for each bank i (i.e., $\sigma_{i,t}^{\Delta NPL} = Std.(\Delta NPL_{i,t}, \Delta NPL_{i,t-1}, \Delta NPL_{i,t-2})$).

[27] We choose to report these results taking model (M2) as our baseline specification since it includes the norperforming loan terms. Results also hold if model (M1) is considered.

Table 8 reports the results for each of these different covariates - the last column considering both $\Delta NPL_{i,t}$ and $\sigma_{i,t}^{\Delta NPL}$ as simultaneous controls. We observe that the economic and statistical significance of the coefficient estimate of $Ebllp_{i,t} \times Post1999_t$ remains almost unaltered across all specifications. In addition, all of the interaction terms are not statistically different from zero. These results suggest that our findings of decreased earnings management after the creation of the Eurozone are unlikely to be explained by simultaneous decreases in risk.

– INSERT TABLE 8 ABOUT HERE –

6.4.2 Exposure to Foreign Exchange Risk

As the Euro adoption eliminated foreign exchange risk across its country members, it likely had the effect of reducing banks foreign exchange risk and reducing earnings volatility either through the reduction of foreign exchange denominated loans or though non-lending business activities (FX derivatives, etc.). This effect could in turn possibly explain a reduction in earnings management as the need for banks to smooth earnings could have been reduced.

To address this possibility we use the number of banks' subsidiaries as a proxy for foreign currency risk under the assumption that banks with more subsidiaries are more likely to face these risks. We partition our treatment sample into groups based on the number of subsidiaries for each bank and re-estimate model (M2). As any such partitions are somewhat ad hoc in nature we construct partitions based on the threshold levels of five, four, and three subsidiaries, which partition the sample into roughly similar sized groups. Results are reported in Table 9 and show that our main results are strongest for banks with few subsidiaries, inconsistent with our results being driven by banks with the largest exposure to foreign currency risk.

– INSERT TABLE 9 ABOUT HERE –

7 Conclusion

This paper provides the first empirical evidence regarding the effect of government guarantees on banks' earnings management behavior. Specifically, we provide evidence on how

government guarantees affect banks' discretionary use of the loan loss provision, which is one of the largest and most important financial reporting accruals for banks. We use two different quasi-natural experiments that constitute plausibly exogenous shocks to banks' government guarantees.

In our first setting we examine the *direct reduction* of explicit government guarantees previously granted to a specific class of German banks (Landesbanken). We find that following the removal of explicit government guarantees these banks *increased* their earnings management behavior. These results are also robust to a difference-in-differences estimators considering German commercial banks as controls.

In our second setting we consider the creation of the Eurozone in 1999 as a positive shock to the implicit government guarantees of banks headquartered in countries comprising the monetary union. We find that *increasing* government guarantees leads to a statistically and economically significant *reduction* in banks' earnings management behavior. These results hold when using a pre-post difference approach (i.e., using treatment banks as their own control) and under a difference-in-differences framework considering banks from countries not affected by the monetary union as controls. Our results suggest that the increase in implicit government guarantees in connection with the creation of the Eurozone and a large and economically significant effect on banks' earnings management incentives. We also provide a variety of analyses to address the possibility that our results relate to alternative explanations beyond government guarantees.

Overall, our findings from these analyses highlight the role of government guarantees as a significant and economically important determinant of banks' financial reporting decisions. Our findings also complement the findings of prior studies that find that government guarantees positively affect banks' debt and equity valuation as well as the competitive structure of the banking industry. In particular, our results suggest that not only do government guarantees affect banks' real activities, but they also have spillover effects on the way banks report about these activities. Given the importance of financial reports to regulators and investors, our results suggest that government guarantees likely also affect the information environment of the banking sector as a whole.

References

Viral Acharya, Itamar Drechsler, and Philipp Schnabl. A Pyrrhic Victory? Bank Bailouts and Sovereign Credit Risk. *The Journal of Finance*, 69(6):2689–2739, 2014.

Viral V Acharya and Stephen G Ryan. Banks Financial Reporting and Financial System Stability. *Journal of Accounting Research*, 54(2):277–340, 2016.

Viral V Acharya and Tanju Yorulmazer. Too Many to FailAn Analysis of Time-inconsistency in Bank Closure Policies. *Journal of financial intermediation*, 16(1): 1–31, 2007.

Viral V Acharya and Tanju Yorulmazer. Cash-in-the-market Pricing and Optimal Resolution of Bank Failures. *Review of Financial studies*, 21(6):2705–2742, 2008.

Viral V Acharya, Itamar Drechsler, and Philipp Schnabl. A Tale of Two Overhangs: the Nexus of Financial Sector and Sovereign Credit Risks. *Financial Stability Review*, (16), 2012.

Viral V Acharya, Deniz Aginer, and A Joseph Warburton. The End of Market Discipline? Investor Expectations of Implicit Government Guarantees. *Available at SSRN 1961656*, 2016.

Anwer S Ahmed, Carolyn Takeda, and Shawn Thomas. Bank Loan Loss Provisions: A Reexamination of Capital Management, Earnings Management and Signaling Effects. *Journal of Accounting and Economics*, 28(1):1–25, 1999.

Franklin Allen, Elena Carletti, Itay Goldstein, and Agnese Leonello. Government Guarantees and Financial Stability. *ECB Working Paper No. 2032. Also available at SSRN 2928537*, 2017.

Matthew D Baron. Countercyclical Bank Equity Issuance. *Working Paper, Cornell University*, 2016.

James R Barth, Gerard Caprio, and Ross Levine. *Rethinking Bank Regulation: Till Angels Govern*. Cambridge University Press, 2008.

Mary Barth, John Elliott, and Mark Finn. Market Rewards Assocated with Patterns of Increasing Earnings. *Journal of Accounting Research*, 37(2):387–413, 1999.

Anne Beatty and Scott Liao. Financial Accounting in the Banking Industry: A Review of the Empirical Literature. *Journal of Accounting and Economics*, 58(2):339–383, 2014.

Anne Beatty, Sandra L Chamberlain, and Joseph Magliolo. Managing Financial Reports of Commercial Banks: The Influence of Taxes, Regulatory Capital, and Earnings. *Journal of Accounting Research*, pages 231–261, 1995.

Geert Bekaert, Campbell R Harvey, Christian T Lundblad, and Stephan Siegel. The European Union, the Euro, and Equity Market Integration. *Journal of Financial Economics*, 109(3):583–603, 2013.

Jacob A Bikker and Paul AJ Metzemakers. Bank Provisioning Behaviour and Procyclicality. *Journal of International Financial Markets, Institutions and Money*, 15(2): 141–157, 2005.

John H Boyd and Edward C Prescott. Financial Intermediary-coalitions. *Journal of Economic Theory*, 38(2):211–232, 1986.

Robert M Bushman and Wayne R Landsman. The Pros and Cons of Regulating Corporate Reporting: A Critical Review of the Arguments. *Accounting and Business Research*, 40(3):259–273, 2010.

Robert M Bushman and Christopher D Williams. Accounting Discretion, Loan Loss Provisioning, and Discipline of banks Risk-taking. *Journal of Accounting and Economics*, 54(1):1–18, 2012.

Robert M Bushman and Christopher D Williams. Delayed Expected Loss Recognition and the Risk Profile of Banks. *Journal of Accounting Research*, 53(3):511–553, 2015.

Menzie D Chinn and Jeffry A Frieden. The Eurozone in Crisis: Origins and Prospects. 2012.

Lee J Cohen, Marcia Millon Cornett, Alan J Marcus, and Hassan Tehranian. Bank Earnings Management and Tail Risk During the Financial Crisis. *Journal of Money, Credit and Banking*, 46(1):171–197, 2014.

Julie H Collins, Douglas A Shackelford, and James M Wahlen. Bank Differences in the Coordination of Regulatory Capital, Earnings, and Taxes. *Journal of accounting research*, pages 263–291, 1995.

Ricardo Correa, Kuan-hui Lee, Horacio Sapriza, and Gustavo A Suarez. Sovereign Credit Risk, Banks' Government Support, and Bank Stock Returns Around the World. *Journal of Money, Credit and Banking*, 46(s1):93–121, 2014.

Douglas W Diamond. Financial Intermediation and Delegated Monitoring. *The Review of Economic Studies*, 51(3):393–414, 1984.

Douglas W Diamond and Philip H Dybvig. Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political economy*, 91(3):401–419, 1983.

Douglas W Diamond and Raghuram G Rajan. Liquidity Risk, Liquidity Creation, and Financial Fragility: A Theory of Banking. *Journal of Political Economy*, 109(2):287–327, 2001.

Ran Duchin and Denis Sosyura. Safer Ratios, Riskier Portfolios: Banks' Response to Government Aid. *Journal of Financial Economics*, 113(1):1–28, 2014.

Markus Fischer, Christa Hainz, Jörg Rocholl, and Sascha Steffen. Government Guarantees and Bank Risk Taking Incentives. 2014.

Mark J Flannery and Sorin M Sorescu. Evidence of Bank Market Discipline in Subordinated Debenture Yields: 1983–1991. *The Journal of Finance*, 51(4):1347–1377, 1996.

Mark J Flannery, Simon H Kwan, and Mahendrarajah Nimalendran. Market Evidence on the Opaqueness of Banking Firms Assets. *Journal of Financial Economics*, 71(3): 419–460, 2004.

Mark J Flannery, Simon H Kwan, and Mahendrarajah Nimalendran. The 2007–2009 Financial Crisis and Bank Opaqueness. *Journal of Financial Intermediation*, 22(1): 55–84, 2013.

Ana Rosa Fonseca and Francisco González. Cross-country Determinants of Bank Income Smoothing by Managing Loan-loss Provisions. *Journal of Banking & Finance*, 32(2): 217–228, 2008.

Priyank Gandhi and Hanno Lustig. Size Anomalies in US Bank Stock Returns. *The Journal of Finance*, 70(2):733–768, 2015.

Priyank Gandhi, Hanno N Lustig, and Alberto Plazzi. Equity is Cheap for Large Financial Institutions: The International Evidence. *NBER Working Paper. Also available at SSRN 2747307*, 2016.

Günther Gebhardt and Zoltan Novotny-Farkas. Mandatory IFRS Adoption and Accounting Quality of European Banks. *Journal of Business Finance & Accounting*, 38(3-4): 289–333, 2011.

Stefan Gerlach, Alexander Schulz, and Guntram B Wolff. Banking and Sovereign Risk in the Euro Area. 2010.

John R. Graham, Campbell Harvey, and Shiva Rajgopal. The Economic Implications of Corporate Financial Reporting. *Journal of Accounting and Economics*, 40(1–3):3–73, 2005.

Mary Brady Greenawalt and Joseph F Sinkey. Bank Loan-loss Provisions and the Income-smoothing Hypothesis: An Empirical Analysis, 1976–1984. *Journal of Financial Services Research*, 1(4):301–318, 1988.

Reint Gropp, Hendrik Hakenes, and Isabel Schnabel. Competition, Risk-shifting, and Public Bail-out Policies. *Review of Financial Studies*, 24(6):2084–2120, 2011.

Reint Gropp, Christian Gruendl, and Andre Guettler. The Impact of Public Guarantees on Bank Risk-taking: Evidence from a Natural Experiment. *Review of Finance*, page rft014, 2013.

Paul Hannon. ECB Contributed to Ireland's Huge Bailout Cost, Report Finds. *Wall Street Journal*, 2016.

Harry Huizinga and Luc Laeven. Bank Valuation and Accounting Discretion During a Financial Crisis. *Journal of Financial Economics*, 106(3):614–634, 2012.

Sudarshan Jayaraman and Rodrigo S Verdi. Are Reporting Incentives and Accounting Standards Substitutes or Complements in Achieving Accounting Comparability? *Available at SSRN 2428263*, 2014.

Jith Jayaratne and Philip E Strahan. The Finance-growth Nexus: Evidence from Bank Branch Deregulation. *The Quarterly Journal of Economics*, 111(3):639–670, 1996.

Liangliang Jiang, Ross Levine, and Chen Lin. Competition and Bank Opacity. *The Review of Financial Studies*, 29(7):1911–1942, 2016.

Bryan T Kelly, Hanno Lustig, and Stijn Van Nieuwerburgh. Too-systemic-to-fail: What Option Markets Imply About Sector-wide Government Guarantees. *American Economic Review*, 2016.

Luc Laeven and Ross Levine. Bank governance, Regulation and Risk Taking. *Journal of Financial Economics*, 93(2):259–275, 2009.

Luc Laeven and Giovanni Majnoni. Loan loss provisioning and economic slowdowns: too much, too late? *Journal of financial intermediation*, 12(2):178–197, 2003.

Chi-Chun Liu and Stephen G Ryan. Income Smoothing over the Business Cycle: Changes in Banks' Coordinated Management of Provisions for Loan Losses and Loan Charge-offs from the Pre-1990 Bust to the 1990s Boom. *The Accounting Review*, 81(2):421–441, 2006.

Alejandro Micco, Ernesto Stein, and Guillermo Ordoñez. The Currency Union Effect on Trade: Early Evidence from EMU. *Economic policy*, 18(37):315–356, 2003.

Donald P Morgan. Rating Banks: Risk and Uncertainty in an Opaque Industry. *The American Economic Review*, 92(4):874–888, 2002.

Susan E Moyer. Capital Adequacy Ratio Regulations and Accounting Choices in Commercial Banks. *Journal of Accounting and Economics*, 13(2):123–154, 1990.

Maureen O'Hara and Wayne Shaw. Deposit Insurance and Wealth Effects: The Value of Being "Too Big to Fail". *The Journal of Finance*, 45(5):1587–1600, 1990.

Daniel Pérez, Vicente Salas-Fumás, and Jesús Saurina. Earnings and Capital Management in Alternative Loan Loss Provision Regulatory Regimes. *European Accounting Review*, 17(3):423–445, 2008.

Raghuram G Rajan and Luigi Zingales. Banks and Markets: The Changing Character of European Finance. 2003.

Christina D Romer and David H Romer. New evidence on the impact of financial crises in advanced countries. *National Bureau of Economic Research*, 2015.

Myron S Scholes, G Peter Wilson, and Mark A Wolfson. Tax Planning, Regulatory Capital Planning, and Financial Reporting Strategy for Commercial Banks. *Review of financial Studies*, 3(4):625–650, 1990.

Gary H Stern and Ron J Feldman. *Too Big to Fail: The Hazards of Bank Bailouts*. Brookings Institution Press, 2004.

Brett Trueman and Sheridan Titman. An Explanation for Accounting Income Smoothing. *Journal of Accounting Research*, pages 127–139, 1988.

Variable Definitions

Variable	Description
$llp_{i,t}$	Bank i's loan loss provision for year t scaled by lagged total loans
$Ebllp_{i,t}$	Bank i's earnings before loan loss provisions and taxes for year t scaled by lagged total loans
$\Delta Loan_{i,t}$	Variation in Bank i's total loans for year t scaled by lagged total assets.
$\Delta NPL_{i,t}$	Change in non-performing loans scaled by lagged total assets
$CAP_{i,t}$	Bank i's total equity by total assets capital ratio at year t
$Size_{i,t}$	Natural logarithm of the bank i's dollar-nominated total assets measured in millions of USD at year t.
$\%\Delta PerCapitaGDP_{c,t}$	Percent (annual) variation of Per Capita GDP for a given country c - in our empirical specifications related to the country a given bank i is domiciled.
$Landesbank_i$	Dummy variable that takes value 1 if bank i is a Landesbank and 0 otherwise.
$Post1999_t$	Dummy variable that takes value 1 if $t \geq 1999$ and 0 otherwise.
$Post1998_t$	Dummy variable that takes value 1 if $t \geq 1998$ and 0 otherwise. Defined to show the lack of pre-Euro trend effects on smoothing.
$Post1997_t$	Dummy variable that takes value 1 if $t \geq 1997$ and 0 otherwise. Defined to show the lack of pre-Euro trend effects on smoothing.
$Post2005_t$	Dummy variable that takes value 1 if $t \geq 2005$ and 0 otherwise.
FEA_i	Dummy variable that takes value 1 if bank i is headquartered in a First Euro Adopter country and 0 otherwise.
$\%\Delta Credit/GDP_{c,t}$	Percent change of the country level Total Credit by GDP ratio (source: World Bank).
$RISK_{i,t}$	Measure of banks' general risk taking based on Laeven and Levine (2009).
$\sigma_{i,t}^{\Delta NLP}$	Time series standard deviation of $\Delta NPL_{i,t}$. For each (i,t) observation we compute the standard deviation of observations $\Delta NPL_{i,t}$, $\Delta NPL_{i,t-1}$and $\Delta NPL_{i,t-2}$(rolling window of 3 years).

Tables and Figures

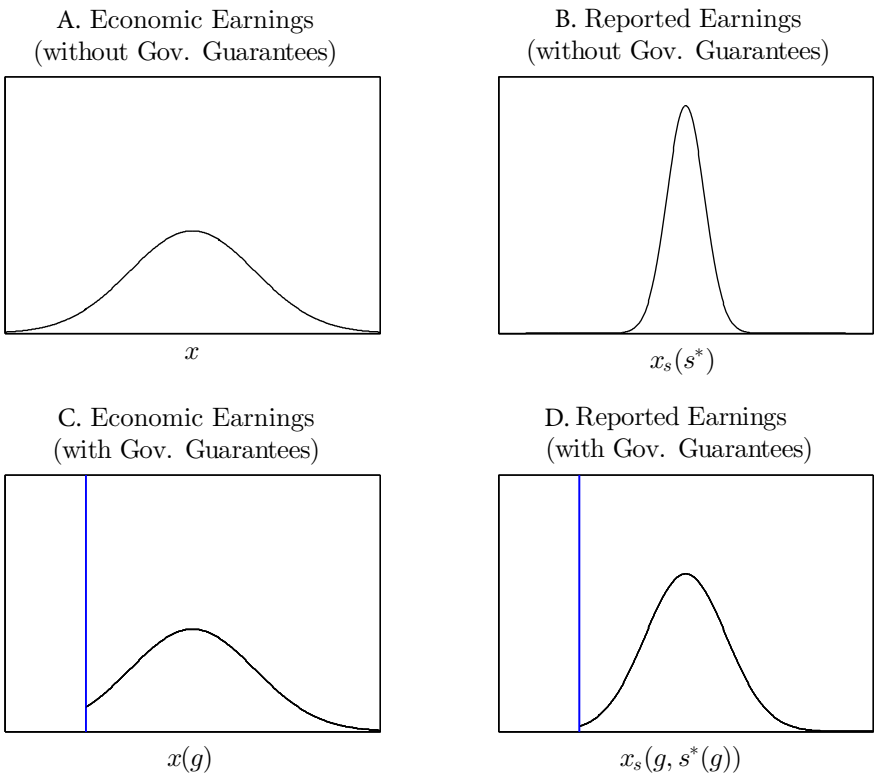

Figure 1: Substitution Effect of Government Guarantees on Managers' Optimal Levels of Earnings Smoothing

Table 1: Sample Selection and Descriptive Statistics - Landesbanken Analysis

Panel A: Sample Selection

Landesbanken Sample Observations per Bank and Year

	2002	2003	2004	2005	2006	2007
Bayerische Landesbank	x	x		x	x	
Bremer Landesbank	x	x	x	x	x	x
HSH Nordbank AG			x	x	x	x
Landesbank Baden-Wuerttemberg	x	x				
Landesbank Berlin Holding AG	x	x	x	x	x	x
Landesbank Hessen-Thueringen - HELABA	x	x	x	x	x	x
Landesbank Saar-SaarLB	x	x	x	x	x	x
Landesbank Schleswig-Holstein - LB Kiel	x					
LRP Landesbank Rheinland-Pfalz	x	x	x	x	x	
Norddeutsche Landesbank NORD/LB	x	x	x	x	x	x
Total Count	9	8	7	8	8	6

Landesbanken Sample - Observations per Variable

	Landesbanken without pre- post- requirement	Landesbanken with pre- post- requirement	Commercial Banks (Controls)
$llp_{i,t}$	46	43	93
$Ebllp_{i,t}$	46	43	93
$llp_{i,t-1}$	46	43	91
$llp_{i,t-2}$	45	42	82
$Size_{i,t-1}$	46	43	93
$\Delta Loan_{i,t}$	46	43	93
$CAP_{i,t-1}$	46	43	93
$\%\Delta PerCapitaGDP_{c,t}$	46	43	93

Table 1: Sample Selection and Descriptive Statistics - Landesbanken Analysis

Panel B: Descriptive Statistics

Landesbanken Sample Summary Statistics					
	N	Mean	Median	St Dev	Min	Max
$llp_{i,t}$	45	0.0054	0.00339	0.0068	-0.0045	0.0370
$llp_{i,t-1}$	45	0.0051	0.0036	0.0049	-0.0025	0.0220
$llp_{i,t-2}$	45	0.0048	0.0041	0.0036	-0.0016	0.0144
$Ebllp_{i,t}$	45	0.0079	0.0079	0.01088	-0.0269	0.0562
$Size_{i,t-1}$	45	11.4368	11.5779	0.9009	9.4765	12.8300
$\Delta Loan_{i,t}$	45	0.0070	0.0068	0.0329	-0.0808	0.0844
$CAP_{i,t-1}$	45	0.0222	0.0199	0.0079	0.0118	0.0420
$\%\Delta PerCapitaGDP_{c,t}$	45	0.0126	0.0076	0.01738	-0.0076	0.0382

Landesbanken Sample Correlation Matrix							
	$llp_{i,t}$	$llp_{i,t-1}$	$llp_{i,t-2}$	$Ebllp_{i,t}$	$Size_{i,t-1}$	$\Delta Loan_{i,t}$	$CAP_{i,t-1}$
$llp_{i,t-1}$	0.180						
$llp_{i,t-2}$	0.238	0.297					
$Ebllp_{i,t}$	0.548	-0.232	-0.051				
$Size_{i,t-1}$	-0.019	0.152	0.073	0.037			
$\Delta Loan_{i,t}$	-0.196	-0.4344	-0.378	0.154	0.035		
$CAP_{i,t-1}$	0.267	0.2857	0.392	-0.179	0.081	-0.311	
$\%\Delta PerCapitaGDP_{c,t}$	-0.424	-0.503	-0.115	-0.003	0.111	0.245	-0.014

Control Sample (Commercial Banks) Summary Statistics					
	N	Mean	Median	St Dev	Min	Max
$llp_{i,t}$	82	0.0087	0.0051	0.0152	-0.0159	0.1095
$llp_{i,t-1}$	82	0.0083	0.0053	0.0118	-0.0183	0.0572
$llp_{i,t-2}$	82	0.0094	0.0054	0.0127	-0.0054	0.0812
$Ebllp_{i,t}$	82	0.0261	0.0134	0.0377	-0.01324	0.21100
$Size_{i,t-1}$	82	10.1024	9.8371	1.3282	8.5175	12.7759
$\Delta Loan_{i,t}$	82	0.0526	0.0248	0.1084	-0.1932	0.3340
$CAP_{i,t-1}$	82	0.0487	0.0388	0.0786	0.0044	0.0701
$\%\Delta PerCapitaGDP_{c,t}$	82	0.0171	0.0119	0.0174	-0.0076	0.0382

Control Sample (Commercial Banks) Correlation Matrix							
	$llp_{i,t}$	$llp_{i,t-1}$	$llp_{i,t-2}$	$Ebllp_{i,t}$	$Size_{i,t-1}$	$\Delta Loan_{i,t}$	$CAP_{i,t-1}$
$llp_{i,t-1}$	0.488						
$llp_{i,t-2}$	0.168	0.486					
$Ebllp_{i,t}$	0.152	-0.061	0.052				
$Size_{i,t-1}$	-0.095	-0.152	-0.260	-0.303			
$\Delta Loan_{i,t}$	0.104	0.174	-0.059	-0.066	-0.006		
$CAP_{i,t-1}$	-0.142	-0.262	0.025	0.612	-0.089	-0.124	
$\%\Delta PerCapitaGDP_{c,t}$	-0.279	-0.176	-0.099	0.191	-0.134	-0.112	0.152

This table describes the sample selection (Panel A) and summary statistics (Panel B) for the Landesbanken analysis. Variables are described in the "Variable Definition" section.

Table 2: Government Guarantees and Earnings Management - Landesbanken Difference Analysis

	Treatment Criterion	
	All Landesbanken	Requiring Pre- and Post- data
$Ebllp_{i,t}$	0.0771	-0.0092
	(0.1430)	(0.0572)
$Post2005_t$	0.0017	0.0004
	(0.0099)	(0.0079)
$Ebllp_{i,t} \times Post2005_t$	0.5670***	0.6640***
	(0.1770)	(0.0796)
$llp_{i,t-1}$	0.1140	0.1950
	(0.1480)	(0.1210)
$llp_{i,t-2}$	0.3850**	0.2810**
	(0.1250)	(0.0920)
$\Delta Loan_{i,t}$	0.0092	0.0239*
	(0.0173)	(0.0121)
$Size_{i,t-1}$	0.0001	-0.0001
	(0.0003)	(0.0002)
$CAP_{i,t-1}$	0.0339	0.0637
	(0.0872)	(0.0621)
$\%\Delta PerCapitaGDP_{c,t}$	-0.3930	-0.3610*
	(0.2200)	(0.1870)
Observations	45	42
Adjusted R-squared	0.777	0.881

This table reports the effect of the "Landesbanken" losing their explicit government guarantees on banks' earnings management using a pre/post difference estimator. The first column comprises all valid observations of Landesbanken (including Landesbank Baden-Wuerttemberg and LB Kiel). The second column corresponds to estimates including only Landesbanken with valid observations before and after 2005 (excluding Landesbank Baden-Wuerttemberg and LB Kiel). Regressions include year fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively. Variables are described in the "Variable Definitions" section.

Table 3: Government Guarantees and Earnings Management - Landesbanken Differences-in-Differences Analysis

	Treatment Criterion	
	All Landesbanken	Requiring Pre- and Post- data
$Ebllp_{i,t}$	0.7530***	0.7520***
	(0.1100)	(0.1110)
$Post2005_t$	-0.0080	-0.0075
	(0.0144)	(0.0145)
$Ebllp_{i,t} \times Post2005_t$	-0.7570***	-0.7560***
	(0.1160)	(0.1170)
$Landesbank_i$	0.0062***	0.0067***
	(0.0022)	(0.0021)
$Post2005_t \times Landesbank_i$	-0.0148***	-0.0154***
	(0.0021)	(0.0020)
$Ebllp_{i,t} \times Landesbank_i$	-0.6880***	-0.7440***
	(0.1470)	(0.1230)
$Ebllp_{i,t} \times Landesbank_i \times Post2005_t$	1.3710***	1.4269***
	(0.1650)	(0.1390)
$llp_{i,t-1}$	0.3780**	0.3910**
	(0.1590)	(0.1661)
$llp_{i,t-2}$	0.0381	0.0303
	(0.0631)	(0.0645)
$\Delta Loan_{i,t}$	0.0009	0.0008
	(0.0095)	(0.0096)
$Size_{i,t-1}$	0.0007	0.0007
	(0.0005)	(0.0005)
$CAP_{i,t-1}$	-0.0079	-0.0072
	(0.0134)	(0.0135)
$\%\Delta PerCapitaGDP_{c,t}$	0.2550	0.2510
	(0.3730)	(0.3730)
Observations	127	124
Adjusted R-squared	0.741	0.749

This table reports the effect of the "Landesbanken" losing their explicit government guarantees on banks' earnings management using a DID approach. The first column comprises all valid observations of Landesbanken (including Landesbank Baden-Wuerttemberg and LB Kiel). The second column corresponds to estimates including only Landesbanken with valid observations before and after 2005 (excluding Landesbank Baden-Wuerttemberg and LB Kiel). The control group for both regressions is comprised of German commercial banks with more than five billion dollars in total assets. Regressions include year fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively. Variables are described in the "Variable Definitions" section.

Table 4: Sample Selection and Summary Statistics - Eurozone Creation Analysis

Panel A - Sample Selection Criteria for Models M1 and M2 (M2 in parenthesis)

First Euro Adopters (Treatment Sample)		
	1996-1998	1999-2001
# Valid observations	1012 (768)	1,162 (924)
Trimming at the 1% and 99%	992 (751)	1,140 (902)
Requiring at least 3 years of bank data	992 (751)	1,140 (902)
Excluding obs with less than 100MM USD of Total Assets	967 (745)	1,059 (844)
Requiring constant samples Pre-Post Euro	902 (717)	1,059 (844)

	Observations	
Country	1996-1998	1999-2001
Austria	2 (0)	6 (0)
Belgium	6 (0)	10 (0)
Finland	23 (17)	23 (15)
France	8 (6)	21 (8)
Germany	21 (0)	23 (0)
Ireland	12 (9)	12 (12)
Italy	624 (539)	740 (645)
Luxembourg	0 (0)	0 (0)
Netherlands	1 (1)	2 (1)
Portugal	61 (42)	68 (46)
Spain	144 (103)	154 (117)

Never Euro Adopters (Control Sample)		
	1996-1998	1999-2001
# Valid observations	280 (166)	449 (305)
Trimming at the 1% and 99%	275 (158)	440 (286)
Requiring at least 3 years of bank data	275 (158)	440 (286)
Excluding obs with less than 100MM USD of Total Assets	270 (157)	412 (280)

	Observations	
Country	1996-1998	1999-2001
Albania	0 (0)	0 (0)
Belarus	0 (0)	1 (0)
Bulgaria	0 (0)	1 (1)
Croatia	3 (0)	13 (7)
Denmark	29 (18)	78 (32)
Georgia	0 (0)	0 (0)
Hungary	4 (1)	16 (6)
Iceland	9 (1)	17 (16)
Macedonia	0 (0)	0 (0)
Norway	77 (55)	122 (107)
Poland	29 (16)	49 (31)
Romania	0 (0)	2 (0)
Republic of Moldova	0 (0)	1 (1)
Russian Federation	3 (0)	3 (1)
Sweden	22 (20)	33 (25)
Switzerland	3 (0)	0 (0)
Turkey	32 (18)	6 (1)
Ukraine	0 (0)	4 (3)
United Kingdom	59 (28)	66 (49)

Panel B - Summary Statistics for First Euro Adopters and Never Euro Adopters

First Euro Adopters Summary Statistics

	1996-1998				1999-2001			
	Obs.	Mean	Median	Std.	Obs.	Mean	Median	Std.
$llp_{i,t}$	902	0.0105	0.0088	0.0097	1059	0.0074	0.0065	0.0067
$llp_{i,t-1}$	902	0.0118	0.0097	0.0107	1059	0.0081	0.0067	0.0088
$llp_{i,t-2}$	902	0.0123	0.0106	0.0109	1059	0.0089	0.0072	0.0094
$\Delta NPL_{i,t+1}$	717	-0.0004	0.0000	0.0086	844	-0.0006	0.0000	0.0090
$\Delta NPL_{i,t}$	717	0.0003	0.0000	0.0058	844	-0.0003	0.0000	0.0072
$\Delta NPL_{i,t-1}$	717	0.0000	0.0000	0.0091	844	-0.0006	0.0000	0.0087
$\Delta NPL_{i,t-2}$	717	0.0010	0.0002	0.0096	844	-0.0005	0.0000	0.0084
$CAP_{i,t-1}$	902	0.0879	0.0823	0.0374	1059	0.0950	0.0866	0.0445
$Size_{i,t-1}$	902	7.9844	7.8229	1.7559	1059	7.7607	7.5487	1.8926
$\%\Delta PerCapitaGDP_{c,t}$	902	0.0217	0.0178	0.0125	1059	0.0259	0.0172	0.0124

First Euro Adopters Correlation Matrix

	$llp_{i,t}$	$llp_{i,t-1}$	$llp_{i,t-2}$	$\Delta NPL_{i,t+1}$	$\Delta NPL_{i,t}$	$\Delta NPL_{i,t-1}$	$\Delta NPL_{i,t-2}$	$CAP_{i,t-1}$	$Size_{i,t-1}$
$llp_{i,t-1}$	0.482								
$llp_{i,t-2}$	0.372	0.478							
$\Delta NPL_{i,t+1}$	-0.041	-0.057	-0.081						
$\Delta NPL_{i,t}$	0.065	-0.015	-0.032	-0.143					
$\Delta NPL_{i,t-1}$	0.073	0.111	-0.011	-0.044	-0.031				
$\Delta NPL_{i,t-2}$	0.172	0.130	0.141	0.054	0.0356	-0.068			
$CAP_{i,t-1}$	0.0499	-0.003	-0.019	0.035	0.052	0.028	0.019		
$Size_{i,t-1}$	-0.059	-0.049	-0.016	-0.018	-0.041	-0.012	-0.014	-0.602	
$\%\Delta PerCapitaGDP_{c,t}$	-0.183	-0.223	-0.157	-0.012	-0.097	-0.121	-0.127	-0.194	0.239

Never Euro Adopters (European Only) Summary Statistics

	1996-1998				1999-2001			
	Obs.	Mean	Median	Std.	Obs.	Mean	Median	Std.
$llp_{i,t}$	270	0.0081	0.0041	0.0149	412	0.0105	0.0058	0.01448
$llp_{i,t-1}$	270	0.0080	0.0040	0.0179	412	0.0106	0.0057	0.0190
$llp_{i,t-2}$	270	0.0120	0.0054	0.0246	412	0.0111	0.0050	0.0399
$\Delta NPL_{i,t+1}$	157	0.0107	-0.0000	0.0886	280	0.0063	0.0019	0.0153
$\Delta NPL_{i,t}$	157	0.0007	-0.0010	0.0113	280	0.0058	0.0011	0.01565
$\Delta NPL_{i,t-1}$	157	-0.0020	-0.0030	0.0114	280	0.0050	0.0006	0.01714
$\Delta NPL_{i,t-2}$	157	-0.0050	-0.0050	0.0173	280	0.0021	-0.0002	0.01529
$CAP_{i,t-1}$	270	0.0758	0.0656	0.0424	412	0.0868	0.0737	0.04904
$Size_{i,t-1}$	270	8.3852	8.0096	1.9939	412	7.9094	7.7048	1.8316
$\%\Delta PerCapitaGDP_{c,t}$	270	0.0351	0.0308	0.0165	412	0.0248	0.0239	0.0191

Never Euro Adopters (European Only) Correlation Matrix

	$llp_{i,t}$	$llp_{i,t-1}$	$llp_{i,t-2}$	$\Delta NPL_{i,t+1}$	$\Delta NPL_{i,t}$	$\Delta NPL_{i,t-1}$	$\Delta NPL_{i,t-2}$	$CAP_{i,t-1}$	$Size_{i,t-1}$
$llp_{i,t-1}$	0.583								
$llp_{i,t-2}$	0.457	0.677							
$\Delta NPL_{i,t+1}$	0.068	0.062	0.055						
$\Delta NPL_{i,t}$	0.520	0.362	0.166	0.094					
$\Delta NPL_{i,t-1}$	0.373	0.419	0.269	0.093	0.424				
$\Delta NPL_{i,t-2}$	0.447	0.403	0.353	0.099	0.346	0.471			
$CAP_{i,t-1}$	0.323	0.233	0.311	0.0634	0.287	0.254	0.154		
$Size_{i,t-1}$	-0.208	-0.196	-0.175	-0.068	-0.212	-0.209	-0.177	-0.603	
$\%\Delta PerCapitaGDP_{c,t}$	0.211	0.223	0.315	0.123	0.099	0.102	0.083	0.241	-0.106

This table describes the sample selection (Panel A) and summary statistics (Panel B) for the Eurozone creation analysis. Variables are described in the "Variable Definition" section.

Table 5: Government Guarantees and Earnings Management - Eurozone Creation Difference Analysis

			Placebo Tests			
	Sample 1996-2011		Sample 1995-2010		Sample 1994-1999	
	Model		Model		Model	
	(M1)	(M2)	(M1)	(M2)	(M1)	(M2)
$Ebllp_{i,t}$	0.1250***	0.1041***	0.0592	0.0453	0.0185	0.0261
	(0.0313)	(0.0399)	(0.0529)	(0.0468)	(0.0384)	(0.0377)
$Post1999_t$	0.0023*	-0.0006				
	(0.0014)	(0.0017)				
$Ebllp_{i,t} \times Post1999_t$	-0.1100***	-0.0845**				
	(0.0290)	(0.0369)				
$Post1998_t$			-0.00165	-0.0049**		
			(0.0026)	(0.0024)		
$Ebllp_{i,t} \times Post1998_t$			-0.0356	-0.0205		
			(0.0467)	(0.0391)		
$Post1997_t$					-0.0033**	-0.0056***
					(0.0015)	(0.0013)
$Ebllp_{i,t} \times Post1997_t$					0.0326	0.0202
					(0.0295)	(0.0289)
$\Delta Loan_{i,t}$	0.0061**		0.0061**		0.0041	
	(0.0027)		(0.0031)		(0.0038)	
$CAP_{i,t-1}$	-0.00026	-0.0036	0.01240	0.0058	0.0120	0.0073
	(0.0061)	(0.0094)	(0.0107)	(0.0154)	(0.0097)	(0.0169)
$\%\Delta PerCapitaGDP_{c,t}$	-0.0092	0.0069	0.0359	0.0016	0.0263	-0.0276
	(0.0292)	(0.0318)	(0.0382)	(0.0409)	(0.0375)	(0.0566)
$llp_{i,t-1}$	0.2650***		0.3310***		0.3690***	
	(0.0644)		(0.0748)		(0.0710)	
$llp_{i,t-2}$	0.1710**		0.1040*		0.1130*	
	(0.0687)		(0.0543)		(0.0614)	
$\Delta NPL_{i,t+1}$		-0.0450		-0.0405		-0.0268
		(0.0329)		(0.0364)		(0.0397)
$\Delta NPL_{i,t}$		0.0238		0.0256		0.0631
		(0.0387)		(0.0428)		(0.0464)
$\Delta NPL_{i,t-1}$		0.0213		0.0411		0.1230*
		(0.0428)		(0.0580)		(0.0661)
$\Delta NPL_{i,t-2}$		0.0895***		0.0842**		0.0720*
		(0.0260)		(0.0341)		(0.0378)
$Size_{i,t-1}$		-0.0001		-0.0002		-0.0001
		(0.0002)		(0.0002)		(0.0003)
Observations	1,958	1,560	1,777	1,410	1,596	1,247
Adjusted R-squared	0.327	0.162	0.307	0.158	0.314	0.151
F-Stats $\beta_1 = \beta_3$	15.77	6.24	-	-	-	-
P-value $\beta_1 = \beta_3$	0.0001	0.0129	-	-	-	-
F-Stats $\beta_1 = \beta_5$	-	-	0.91	0.59	-	-
P-value $\beta_1 = \beta_5$	-	-	0.3401	0.4421	-	-
F-Stats $\beta_1 = \beta_7$	-	-		-	0.05	0.01
P-value $\beta_1 = \beta_7$	-	-		-	0.8296	0.9268

This table reports the effect of an increase in implicit government guarantees from the Eurozone creation on banks' earnings management using a pre/post difference estimator. The first two columns report the results using the actual event time (post-1999 event) using data from 1996-2011. The other columns consider placebo event times ($Post1998_t$ and $Post1997_t$) using data from 1995-2010 and 1994-1999. Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively.

Table 6: Government Guarantees and Earninsg Management - Eurozone Creation Differences-in-Differences Analysis

	Different Control Groups					
	(a) European Only		(b) Europe + ACJ		(c) Europe + ACJ + US	
	(M1)	(M2)	(M1)	(M2)	(M1)	(M2)
$Ebllp_{i,t}$	0.0407*	0.0293	0.0391*	0.0374	0.0620***	0.0780***
	(0.0223)	(0.0277)	(0.0220)	(0.0292)	(0.0206)	(0.0264)
$Post1999_t$	0.0006	-0.0015	-0.0015*	-0.0026**	-0.0013	-0.0016*
	(0.0012)	(0.0012)	(0.0009)	(0.0010)	(0.0008)	(0.0010)
$Ebllp_{i,t} \times Post1999_t$	-0.0044	0.0102	0.0055	0.0063	0.0048	0.0013
	(0.0320)	(0.0336)	(0.0307)	(0.0339)	(0.0246)	(0.0290)
FEA_i	-0.00179	-0.0200***	-0.00121	-0.0217***	-0.00042	-0.0201***
	(0.00191)	(0.00266)	(0.00167)	(0.00239)	(0.0016)	(0.00208)
$FEA_i \times Post1999_t$	0.0015	0.0015	0.0028**	0.0020	0.0027**	0.0019
	(0.0016)	(0.0017)	(0.0014)	(0.0016)	(0.0014)	(0.0016)
$Ebllp_{i,t} \times FEA_i$	0.0809**	0.0793	0.0828**	0.0741	0.0666*	0.0353
	(0.0385)	(0.0484)	(0.0384)	(0.0491)	(0.0385)	(0.0481)
$Ebllp_{i,t} \times FEA_i \times Post1999_t$	-0.0982**	-0.0983**	-0.110***	-0.100**	-0.119***	-0.0972**
	(0.0432)	(0.0499)	(0.0422)	(0.0497)	(0.0391)	(0.0469)
$llp_{i,t-1}$	0.2690***		0.2560***		0.1230*	
	(0.0437)		(0.0379)		(0.0710)	
$llp_{i,t-2}$	0.0475**		0.0482***		0.109***	
	(0.0187)		(0.0174)		(0.0329)	
$CAP_{i,t-1}$	-0.0002	-0.0080	0.0039	0.0011	0.0023	0.0036
	(0.0082)	(0.0090)	(0.0078)	(0.0086)	(0.0053)	(0.0067)
$\Delta NPL_{i,t+1}$		-0.0059		-0.0070		-0.0037
		(0.0052)		(0.0054)		(0.0057)
$\Delta NPL_{i,t}$		0.1300***		0.1170***		0.1260***
		(0.0390)		(0.0316)		(0.0275)
$\Delta NPL_{i,t-1}$		0.0448		0.0633*		0.0463*
		(0.0397)		(0.0344)		(0.0256)
$\Delta NPL_{i,t-2}$		0.1270***		0.0956***		0.0424
		(0.0325)		(0.0282)		(0.0269)
$Size_{i,t-1}$	0.0000	-0.0001	0.0001	0.0003*	0.0002*	0.0004***
	(0.0001)	(0.0002)	(0.0001)	(0.0002)	(0.0001)	(0.0001)
$\%\Delta PerCapitaGDP_{c,t}$	-0.0978**	-0.0358	-0.0886***	-0.0509**	-0.0747***	-0.0644***
	(0.0426)	(0.0302)	(0.0313)	(0.0223)	(0.0215)	(0.0148)
Observations	2,643	1,998	3,094	2,352	6,206	5,093
Adjusted R-squared	0.410	0.301	0.410	0.319	0.381	0.291

This table reports the effect of an increase in implicit government guarantees from the Eurozone creation on banks' earnings management using a DID approach. Control groups are comprised of (a) only European countries that didn't adopt the Euro anytime until 2015; (b) European non-Euro adopters augmented by Australia, Canada and Japan; and (c) European non-Euro adopters augmented by Australia, Canada, Japan and the United States. Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively. Variables are described in the "Variable Definitions" section.

Table 7: Eurozone Creation and Bank Risk and Performance

Variable	Tier1 Cap. Ratio	Total Reg. Cap. Ratio	Interbank Ratio	Earnings before LLP and Taxes	Return on Avg. Assets	Return on RWA
FEA_i	0.0332***	0.0326***	1.2840***	-0.0095***	-0.0061***	0.0023
	(0.0055)	(0.0055)	(0.1290)	(0.0026)	(0.0011)	(0.0018)
$Post1999_t$	0.0211***	0.0182***	0.2030*	-0.0039	-0.0031***	-0.0015
	(0.0049)	(0.0056)	(0.1100)	(0.0025)	(0.0011)	(0.0014)
$FEA_i \times Post1999_t$	-0.0155***	-0.0286***	-0.7190***	0.0034	0.0038***	0.2250
	(0.0058)	(0.0065)	(0.1430)	(0.0026)	(0.0012)	(0.2250)
Observations	2,032	2,278	2,568	2,914	2,914	593
Adjusted R-squared	0.0287	0.0155	0.0553	0.0297	0.0524	0.0061

This table considers whether the Eurozone creation affected other bank risk and performance factors. We consider the differential effects on the DID specification for (1) Tier 1 Capital Ratio; (2) Total Regulatory Capital Ratio; (3) Interbank Ratio (interbank assets by interbank liabilities); (4) Earnings before loan loss provisions and taxes normalized by lagged total assets; (5) loan loss provision normalized by lagged total assets; (6) Return on Average Assets; and (7) Risk-weighted Assets by Total Assets for FEA and NEA observations, pre- and post-1999. Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of $p<0.1$, $p<0.05$, and $p<0.01$, respectively.

Table 8: Eurozone Creation Analysis Controlling for Macro and Bank-Specific Factors

	Controlling for confounding factors				
	Credit Boom	Risk Taking	Loan Portfolio Risk		
	(1)	(2)	(3)	(4)	(5)
$Ebllp_{i,t}$	0.0775*	0.2200***	0.1050***	0.0805**	0.0810**
	(0.0413)	(0.0697)	(0.0384)	(0.0315)	(0.0315)
$Post1999_t$	-0.0007	-0.0009	-0.0005	-0.0005	-0.0005
	(0.0018)	(0.0013)	(0.0015)	(0.0016)	(0.0014)
$Ebllp_{i,t} \times Post1999_t$	-0.0936**	-0.1090*	-0.0866**	-0.0716**	-0.0724**
	(0.0403)	(0.0621)	(0.0347)	(0.0308)	(0.0302)
$\Delta NPL_{i,t+1}$	-0.0398	0.0117	-0.0458	-0.0259	-0.0269
	(0.0326)	(0.0375)	(0.0328)	(0.0356)	(0.0353)
$\Delta NPL_{i,t}$	0.0291	0.1500***	-0.0262	0.0248	-0.0020
	(0.0377)	(0.0414)	(0.1340)	(0.0366)	(0.1230)
$\Delta NPL_{i,t-1}$	0.0235	0.0682*	0.0208	0.0783*	0.0774*
	(0.0432)	(0.0350)	(0.0425)	(0.0426)	(0.0419)
$\Delta NPL_{i,t-2}$	0.0892***	0.1050***	0.0904***	0.1440***	0.1450***
	(0.0266)	(0.0234)	(0.0259)	(0.0312)	(0.0302)
$CAP_{i,t-1}$	-0.0057	-0.0228	-0.0036	-0.0046	-0.0045
	(0.0088)	(0.0159)	(0.0093)	(0.0091)	(0.0091)
$Size_{i,t-1}$	-0.0001	0.0000	-0.0001	-0.0001	-0.0001
	(0.0002)	(0.0003)	(0.0002)	(0.0002)	(0.0002)
$\%\Delta PerCapitaGDP_{c,t}$	-0.0323	0.0292	0.00730	0.0025	0.0030
	(0.0441)	(0.0282)	(0.0318)	(0.0307)	(0.0308)
$\%\Delta Credit/GDP_{c,t}$	-0.0150**				
	(0.0061)				
$Ebllp_{i,t} \times \%\Delta Credit/GDP_{c,t}$	0.9450**				
	(0.4360)				
$Ebllp_{i,t} \times Post1999_t \times \%\Delta Credit/GDP_{c,t}$	-0.5230				
	(0.4400)				
$Ebllp_{i,t} \times RISK_{i,t}$		-0.0339*			
		(0.0199)			
$Ebllp_{i,t} \times RISK_{i,t} \times Post1999_t$		0.0160			
		(0.0150)			
$RISK_{i,t}$		0.0017**			
		(0.0007)			
$Ebllp_{i,t} \times \Delta NPL_{i,t}$			1.9970		1.1890
			(4.4005)		(4.2390)
$Ebllp_{i,t} \times \Delta NPL_{i,t} \times Post1999_t$			-0.7340		-0.5920
			(1.9081)		(1.8110)
$\sigma_{i,t}^{\Delta NLP}$				0.0332	0.0292
				(0.1190)	(0.1101)
$Ebllp_{i,t} \times \sigma_{i,t}^{\Delta NLP}$				6.8220*	6.9050*
				(3.8020)	(3.5660)
$Ebllp_{i,t} \times \sigma_{i,t}^{\Delta NLP} \times Post1999_t$				-2.7170	-2.7701
				(2.0401)	(1.8940)
Observations	1,560	413	1,560	1,560	1,560
Adjusted R-squared	0.177	0.288	0.162	0.196	0.195

This table reports results for the Eurozone creation based on the pre/post differences approach after including additional controls. The regression specifications include interaction terms to control for (i) the potential credit boom generated from the economic integration of Eurozone (est. 1); (ii) general bank-specific risk taking policies (est. 2); and (iii) bank-specific risk from the loan portfolio (est. 3 to 5). Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively.

Table 9: Eurozone Creation Analysis and Number of Subsidiaries

	Number of Subsidiaries Criteria					
	Threshold 5		Threshold 4		Threshold 3	
	≤ 5	> 5	≤ 4	> 4	≤ 3	> 3
$Ebllp_{i,t}$	0.1290***	0.1021	0.1350***	0.0946	0.1071**	0.1201*
	(0.0455)	(0.0774)	(0.0456)	(0.0739)	(0.0462)	(0.0660)
$Post1999_t$	0.0008	-0.0021	0.0010	-0.0024	-0.0001	-0.0011
	(0.0017)	(0.0036)	(0.0017)	(0.0035)	(0.0017)	(0.0032)
$Ebllp_{i,t} \times Post1999_t$	-0.1260***	-0.0299	-0.1320***	-0.0245	-0.1020**	-0.0575
	(0.0452)	(0.0754)	(0.0453)	(0.0715)	(0.0453)	(0.0634)
$\Delta NPL_{i,t+1}$	-0.0325	-0.0643	-0.0101	-0.1050**	-0.0298	-0.0582
	(0.0396)	(0.0403)	(0.0396)	(0.0470)	(0.0376)	(0.0613)
$\Delta NPL_{i,t}$	0.0399	0.0003	0.0799*	-0.0318	0.0569	-0.0140
	(0.0511)	(0.0579)	(0.0466)	(0.0625)	(0.0480)	(0.0595)
$\Delta NPL_{i,t-1}$	0.0235	0.0444	0.0767*	-0.0587	0.0664*	-0.0414
	(0.0539)	(0.0553)	(0.0393)	(0.0895)	(0.0398)	(0.0864)
$\Delta NPL_{i,t-2}$	0.0870***	0.1250***	0.0675**	0.1590***	0.0760**	0.1301***
	(0.0294)	(0.0367)	(0.0282)	(0.0354)	(0.0308)	(0.0421)
$CAP_{i,t-1}$	0.0045	-0.0136	0.0061	-0.0120	-0.0025	-0.0061
	(0.0123)	(0.0123)	(0.0123)	(0.0122)	(0.0127)	(0.0123)
$Size_{i,t-1}$	0.0000	-0.0002	0.0001	-0.0001	0.0001	-0.0002
	(0.0003)	(0.0002)	(0.0003)	(0.0002)	(0.0003)	(0.0003)
$\%\Delta PerCapitaGDP_{c,t}$	0.0691	-0.0355	0.0697	-0.0300	0.0256	0.0012
	(0.0676)	(0.0233)	(0.0679)	(0.0233)	(0.0600)	(0.0350)
Observations	861	699	817	743	746	814
Adjusted R-squared	0.173	0.195	0.189	0.191	0.183	0.170

This table reports results for the Eurozone creation based on the pre/post difference approach after segmenting the sample based on the variation in the number of bank subsidiaries. Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively. Variables are described in the "Variable Definitions" section.

Appendices

A Proofs

Proposition A.1. *There exists an upper bound s_{max} satisfying $0 < s_{max} \leq 1$ for which the function $E[y(x_1, \tilde{x}_2, s)]$ is increasing in s for every $0 \leq s \leq s_{max}$. In other words, since $E[y(x_1, \tilde{x}_2, s)]$ is differentiable in the interval $0 \leq s \leq 1$ we must have $F(x_1, s) = \frac{\partial}{\partial s} E[y(x_1, \tilde{x}_2, s^*)] > 0$ for every $0 \leq s \leq s_{max}$.*

Proof. To illustrate the underlying logic of the proposition we can write the analytical expression for the expectation as

$$E[y(x_1, \tilde{x}_2, s)] = \int_{-\infty}^{+\infty} \frac{a f_A g_A}{a f_A g_A + b f_B g_B} \Phi(e_2; \sigma_i^2) de_2$$

where $\sigma_i = \{\sigma_A, \sigma_B\}$ (depending on the bank type, observable to the manager), $a = p_A/\sigma_A$, $b = p_B/\sigma_B$ and

$$\begin{aligned}
e_2 &= x_2 - \mu \\
\psi &= x_1 - \mu \\
f_A &= \exp\Big(- \frac{((1-s)(x_1-\mu))^2}{2\sigma_A^2} \Big) = \exp\Big(- \frac{((1-s)\psi)^2}{2\sigma_A^2} \Big) \\
f_B &= \exp\Big(- \frac{((1-s)(x_1-\mu))^2}{2\sigma_B^2} \Big) = \exp\Big(- \frac{((1-s)\psi)^2}{2\sigma_B^2} \Big) \\
g_A &= \exp\Big(- \frac{(e_2 - s(\mu - x_1))^2}{2\sigma_A^2} \Big) = \exp\Big(- \frac{(s\psi + e_2)^2}{2\sigma_A^2} \Big) \\
g_B &= \exp\Big(- \frac{(e_2 - s(\mu - x_1))^2}{2\sigma_B^2} \Big) = \exp\Big(- \frac{(s\psi + e_2)^2}{2\sigma_B^2} \Big)
\end{aligned}$$

To find the partial derivative of the expectation with respect to the smothing level s we can simply differentiate the integrand on the improper integral as follows:

$$\frac{\partial}{\partial s} E[y(x_1, \tilde{x}_2, s)] = \int_{-\infty}^{+\infty} \Phi(e_2; \sigma_i^2) \frac{\partial}{\partial s} \left\{ \frac{a f_A g_A}{a f_A g_A + b f_B g_B} \right\} de_2$$

Calling the denominator term $d = a f_A g_A + b f_B g_B$ and the derivatives (with respect to s)

of the auxiliary function as

$$
\begin{aligned}
f'_A &= \frac{\psi^2(1-s)}{\sigma_A^2}\exp\Big(-\frac{((1-s)\psi)^2}{2\sigma_A^2}\Big)\\
f'_B &= \frac{\psi^2(1-s)}{\sigma_B^2}\exp\Big(-\frac{((1-s)\psi)^2}{2\sigma_B^2}\Big)\\
g'_A &= -\frac{\psi(s\psi+e_2)}{\sigma_A^2}\exp\Big(-\frac{(s\psi+e_2)^2}{2\sigma_A^2}\Big)\\
g'_B &= -\frac{\psi(s\psi+e_2)}{\sigma_B^2}\exp\Big(-\frac{(s\psi+e_2)^2}{2\sigma_B^2}\Big)
\end{aligned}
$$

the previous expression becomes

$$
\begin{aligned}
&\frac{\partial}{\partial s}E[y(x_1,\tilde{x}_2,s)] =\\
&\qquad F(x_1,s) = \quad ab\int_{-\infty}^{+\infty}\Phi(e_2;\sigma_i^2)\bigg(\frac{g_Ag_Bf_A(f'_A-f'_B)+f_Af_B(g'_Ag_B-g'_Bg_A)}{d^2}\bigg)de_2
\end{aligned}
$$

After some algebraic manipulation we arrive at the result.

□

B Timeline of Related Events to the Eurozone Creation

Timeline of the Euro Implementation and Relevant Discussions - adapted from http://www.theguardian.com/world/2003/jun/06/euro.eu

Date	Event Description
1957	Creation of the EEC (predecessor of the EU) by the treaty of Rome. FX fluctuations already seen as a concern for economic stability.
1961	Proposition of a European monetary reserve system - though no actions taken until 1969.
1969	The heads of EEC states agree on the establishment of a economic and monetary union by 1980.
1970	Luxembourg's prime minister (Pierre Werner) proposes the union to move towards a single economy in 10 years with fixed FX but keeping individual country currencies. Plan failed with the collapse of the Bretton Woods. The EEC proposes actions towards political unity.
1972	European currencies (even of non-EEC countries) are constrained to fluctuations within a 4.5% limit (called monetary snake). 1974 Oil crisis forces out some currencies later.
1979	The European monetary system (EMS) formally substitutes the monetary snake (including only Germany, Denmark and the Benelux countries by then).
1989	Heads of the European Community states agree on the implementation of the Economic and Monetary Union EMU.
1990	Stage 1 of the EMU implementation: capital transactions liberalization and increasing cooperation among national banks
1992	The Maastricht Treaty is signed in February. The UK declines during the final state. Denmark rejects by Referendum. On September currency speculation forces the UK to leave the ERM
1994	Stage 2 of the EMU starts, being comprised by the establishment of the European Monetary Institute (EMI) as the predecessor of the European Central Bank (ECB). Member countries commit to pursue currency convergence criteria.
1998	The European Commission recommends 11 countries to participate in the first wave of monetary union: Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, Netherlands, Portugal and Spain. The European Central Bank is established (Frankfurt) and the FX rates between the euro and national currencies are fixed on December 31.
1999	On January 1st the Euro is introduced and monetary policy responsibility is transfered from individual countries' central banks to the ECB. The new currency is mainly used for non-cash transactions as the 11 original currencies from the adopters are simply subdivisions.
2001	Greece joins the Euro.
2002	Euro notes and coins become legal tender in 12 countries (11 first adopters and Greece). Between January 28 and February 28 all eurozone countries ceased the legal tender aspect of their national currencies.

C Analysis of the Subsample of Scandinavian Countries

Although we have carefully selected treatment and control groups to ensure comparability of earnings smoothing (parallel) trends across countries and avoid the inclusion of banks which can be affected by contemporaneous events or omitted variables, the concern that cross-sectional variation on economic characteristics and banking sectors of treatment and control groups can be naturally raised.

To further mitigate this problem we conduct a complementary differences-in-differences analysis that is restricted to only Scandinavian nations (namely Denmark, Finland, Sweden and Norway). The fact that only one of these four countries is a Euro adopter (Finland adopted the Euro in 1999 whereas all other three countries have never joined the Eurozone) provides an interesting setting to conduct an additional analysis.

Scandinavian nations have a higher degree of similarity in many aspect vis-á-vis other European nations. From a political standpoint, Denmark, Norway and Sweden are constitutional monarchies with a parliamentary system (Finland is the only parliamentary republic). Although normally seen as successful examples of social-democracies with a higher participation of the government in the economy and broader welfare states, all four countries are highly ranked in terms of economic freedom. Last but not least, all four countries were somehow affected by the so called Nordic Banking crisis in the early 1990's (Barth et al., 2008; Romer and Romer, 2015).

Analyzing the size distributions of bank-year observations of the 4 countries (seen in Figure C1), it seems reasonable that a natural country counterfactual for Finland will be Sweden. The size supports for Finland and Denmark are relatively comparable as well - although there is a higher frequency of small banks for the later. Norway certainly represents the least comparable (to Finland) country, as no large banks are actually seen (and the number of bank year observations on the small size range is larger than any of its three Scandinavian peers).

Table C1 provides some general economic and social indicators of the four Scandinavian countries considered for this subsample study. We re-estimae model (15) considering different countries as representative of control banks and having Finish banks as our treatment group. Results are presented in Table C2.

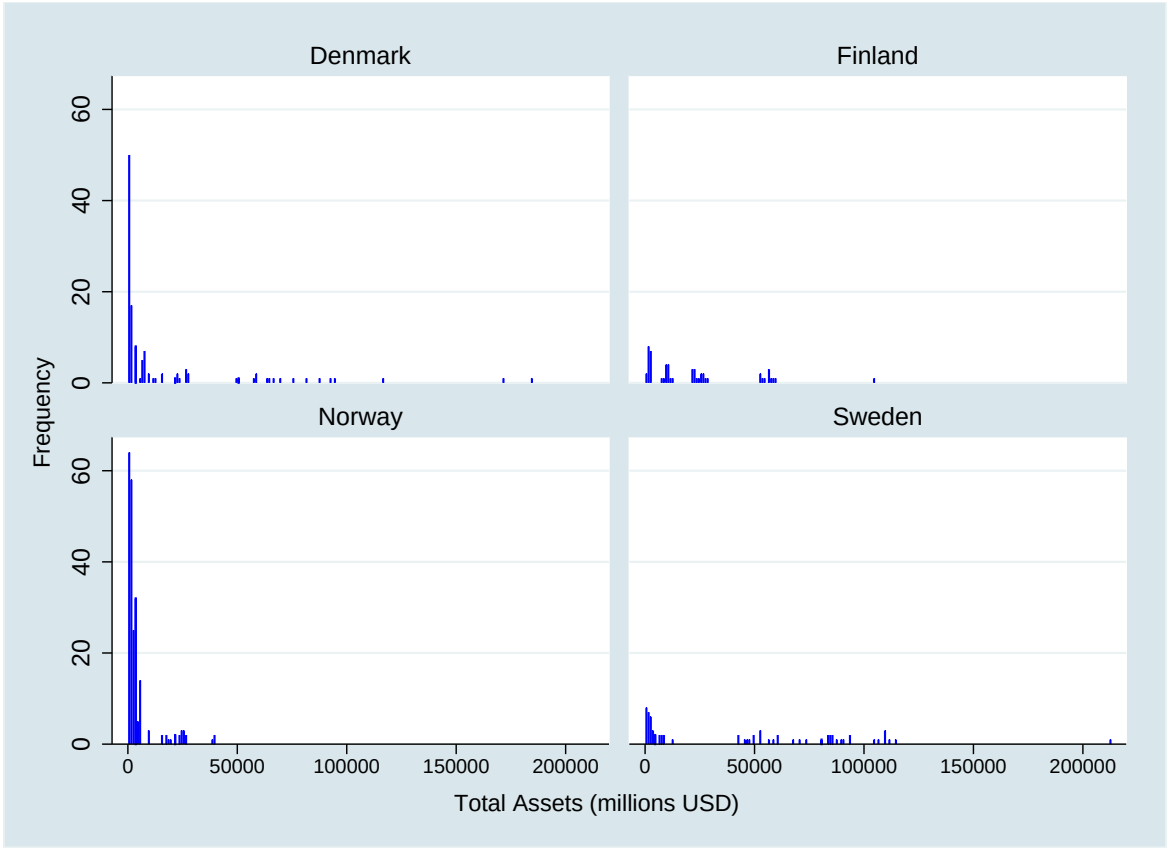

Figure C1: Histogram of Total Assets (measured in millions of USD) for all bank-year observations of Scandinavian countries (Finland, Denmark, Sweden and Norway) comprised by the sample selection.

Table C1: Cross-country Comparison of Scandinavian Countries and Banking Systems

Macroeconomic and Country-specific characteristics				
	Finland	Sweden	Denmark	Norway
Credit/GDP (1996)	59.34	95.97	31.53	71.25
Credit/GDP (1999)	53.15	98.77	34.87	80.35
Credit/GDP (2001)	55.72	98.80	142.56	80.52
GDP per Capita (1996)	28210	31465	37521	52892
GDP per Capita (1999)	32743	35208	40321	57246
GDP per Capita (2001)	35327	37292	41886	59620
Corruption Perception 1996	4	3	2	6
Corruption Perception 1999	2	3	1	9
Corruption Perception 2001	1	6	2	10
Index of Economic Freedon (1996)	47	55	31	39
Index of Economic Freedon (1999)	54	51	32	29
Index of Economic Freedon (2001)	27	43	33	41

Banking Regulation characteristics (Barth et al., 2008)				
	Finland	Sweden	Denmark	Norway
Bank Supervisory Authority	Single	Single	Single	Single
Central Bank as the Supervisory Authority	No	No	No	No
Scope of Bank Supervisory Authority for Fin. sector	Multiple	Single	Multiple	Single
Degree of Bank Supervisory Independence	2	2	0	2

Average scale of financial distress (Romer and Romer, 2015)				
	Finland	Sweden	Denmark	Norway
Viking Crisis (1991.2-1994.1)	4	2.167	-	5.5

Distribution of Total Assets for valid bank-year observations					
		Finland	Sweden	Denmark	Norway
N Bank-year observations (1996-2001)		54	70	120	222
	%				
	1	1,025.41	468.17	134.13	203.68
	5	1,257.75	600.11	170.59	288.43
	10	1,486.01	860.99	252.38	367.36
	25	2,775.68	2,312.17	395.97	913.55
Total Assets Percentiles (millions USD)	50	11,017.20	43,918.98	1,525.80	1,905.76
	75	26,466.03	83,314.37	10,988.81	3,518.68
	90	56,891.75	105,411.20	61,094.25	9,259.81
	95	59,017.44	110,021.40	84,545.67	24,075.57
	99	104,457.50	212,874.80	171,301.40	38,700.34

This table describes country-level macroeconomic, banking regulation and bank-specific summary statistics of the 4 Scandinavian countries considered in the analysis of the creation of the Eurozone.

Table C2: DID Estimation for Scandinavian Countries

	Different Control Countries			
	Sweden	Denmark	Norway	Norway-Capped
$Ebllp_{i,t}$	0.0290	0.2360***	0.1840**	0.1361*
	(0.0702)	(0.0409)	(0.0697)	(0.0805)
$\Delta NPL_{i,t+1}$	0.0334	-0.2901	0.1510**	0.1600**
	(0.0947)	(0.4250)	(0.0600)	(0.0600)
FEA_i	0.0033	0.0046	0.0021	-0.0024
	(0.0023)	(0.0033)	(0.0019)	(0.0027)
$Post1999_t$	-0.0034	0.0074**	0.0017	0.0017
	(0.0033)	(0.0032)	(0.0025)	(0.0027)
$FEA_i \times Post1999_t$	0.0008	-0.0037	-0.0042*	-0.0017
	(0.0026)	(0.0029)	(0.0024)	(0.0025)
$Ebllp_{i,t} \times FEA_i$	0.1730	0.0485	0.0123	0.0870
	(0.1030)	(0.1110)	(0.0776)	(0.0797)
$Ebllp_{i,t} \times Post1999_t$	0.0217	-0.1360**	-0.2240**	-0.1340
	(0.0775)	(0.0634)	(0.1090)	(0.1090)
$Ebllp_{i,t} \times FEA_i \times Post1999_t$	-0.3130**	-0.2130*	-0.0473	-0.2060*
	(0.1180)	(0.1210)	(0.1201)	(0.1060)
$\Delta NPL_{i,t}$	-0.1030	-0.5270***	0.3160***	0.3050***
	(0.1310)	(0.1480)	(0.0892)	(0.0893)
$\Delta NPL_{i,t-1}$	0.0388	-0.1850***	0.0218	-0.0441
	(0.0379)	(0.0482)	(0.0441)	(0.0466)
$\Delta NPL_{i,t-2}$	0.0344	-0.1930**	0.0457**	0.0296
	(0.0254)	(0.0877)	(0.0194)	(0.0226)
$CAP_{i,t-1}$	0.0176	-0.0016	-0.0183	-0.0104
	(0.0317)	(0.0250)	(0.0221)	(0.0214)
$Size_{i,t-1}$	0.0008*	-0.0002	0.0005	0.0010
	(0.0004)	(0.0004)	(0.0005)	(0.0006)
$\%\Delta PerCapitaGDP_{c,t}$	-0.1770***	-0.1750*	-0.0375	-0.0272
	(0.0633)	(0.0936)	(0.0327)	(0.0450)
Observations	77	82	194	159
Adjusted R-squared	0.500	0.565	0.424	0.473
F-Stats $\beta_1 = \beta_6$	0.78	1.99	1.55	0.10
P-value $\beta_1 = \beta_6$	0.3858	0.1693	0.2186	0.7551
F-Stats $\beta_1 = \beta_7$	0.00	18.75	6.16	2.46
P-value $\beta_1 = \beta_7$	0.9609	0.0002	0.0159	0.1235
F-Stats $\beta_1 = \beta_8$	20.77	13.85	4.75	15.08
P-value $\beta_1 = \beta_8$	0.0001	0.0009	0.0334	0.0003
F-Stats $\beta_7 = \beta_8$	3.21	0.23	0.66	0.12
P-value $\beta_7 = \beta_8$	0.0857	0.6365	0.4215	0.7350

This table reports coefficient estimates of the analysis of the Eurozone creation for the subsample restricted to only Scandinavian countries and for the period 1996 to 2001. We contrast Finland (First Euro Adopter) with its Scandinavian Peers (Sweden, Denmark and Norway) that never adopted the Euro as control groups (NEA group). The last column represents Norway as a control group with a cap to 15 billion USD on total assets for all bank-year observations to ensure common support. Regressions include year, bank-type, and country fixed effects. Bank-level clustered standard errors are reported in parentheses. ***, **, and * indicate statistical significance levels of p<0.1, p<0.05, and p<0.01, respectively. Variables are described in the "Variable Definitions" section.